

U.S. Coast Guard Research and Development Center
1082 Shennecossett Road, Groton, CT 06340-6096

Report No. CG-D-21-99, II

**FULL-SCALE TESTING OF WATER MIST FIRE SUPPRESSION SYSTEMS FOR
SMALL MACHINERY SPACES AND SPACES WITH COMBUSTIBLE BOUNDARIES**

VOLUME II



**FINAL REPORT
OCTOBER 1999**



This document is available to the U.S. public through the
National Technical Information Service, Springfield, VA 22161

Prepared for:

**U.S. Department of Transportation
United States Coast Guard
Marine Safety and Environmental Protection (G-M)
Washington, DC 20593-0001**

DTIC QUALITY INSPECTED 4

19991115 162

NOTICE

This document is disseminated under the sponsorship of the Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

The United States Government does not endorse products or manufacturers. Trade or manufacturers' names appear herein solely because they are considered essential to the object of this report.

This report does not constitute a standard, specification, or regulation.



Marc B. Mandler, Ph.D.
Technical Director
United States Coast Guard
Research & Development Center
1082 Shennecossett Road
Groton, CT 06340-6096



Technical Report Documentation Page

1. Report No. CG-D-21-99, II	2. Government Accession Number	3. Recipient's Catalog No.
4. Title and Subtitle FULL-SCALE TESTING OF WATER MIST FIRE SUPPRESSION SYSTEMS FOR SMALL MACHINERY SPACES AND SPACES WITH COMBUSTIBLE BOUNDARIES – VOLUME II		5. Report Date October 1999
8. Author(s) G. Back, B. Lattimer, C. Beyler, P. DiNenno, R. Hansen		6. Performing Organization Code Project No. 3308.1.98 / UDI 69 8. Performing Organization Report No. R&DC-69-99, II
9. Performing Organization Name and Address Hughes Associates, Inc. 3610 Commerce Drive, Suite 817 Baltimore, MD 21227-1652		10. Work Unit No. (TRAIS) SHRD Report No. 131
12. Sponsoring Organization Name and Address U.S. Department of Transportation United States Coast Guard Office of Marine Safety and Environmental Protection (G-M) Washington, DC 20593-0001		11. Contract or Grant No. Contract No. DTCG39-97-D-E00150 D.O. Number: DTCG39-97-F-E0057 13. Type of Report & Period Covered Final Report
14. Sponsoring Agency Code Commandant (G-MSE-4)) U.S. Coast Guard Headquarters Washington, DC 20593-0001		
15. Supplementary Notes The Hughes Associates, Inc. Senior Technical Representative is Dr. Craig Beyler. The Coast Guard Research and Development technical contact and COTR is Mr. Rich Hansen, (860) 441-2866. The Coast Guard Headquarters Sponsor is Robert Markle of the Marine Safety and Environmental Protection Organization.		
16. Abstract (MAXIMUM 200 WORDS) This report provides an evaluation of the firefighting capabilities of the state-of-the-art water mist fire suppression systems in smaller ($\sim 100 \text{ m}^3$) machinery space applications. The primary objective of this investigation was to evaluate the applicability of the IMO test protocol and design requirements to smaller machinery spaces and to machinery spaces with combustible boundaries. The following water mist systems were included in this evaluation: Chemetron CFS, Fike Micromist, Grinnell AquaMist, Fogtec Fire Protection Systems, and the U.S. Navy's water mist system.		
The five water mist systems were each capable of extinguishing a majority (at least nine out of fifteen) of the test fires included in this evaluation. Variations in system capabilities were observed primarily during the tests conducted with forced ventilation. Machinery spaces with combustible boundaries were shown not to pose a significant challenge to the water mist systems. The results of these tests suggest that the current IMO design requirements can be reduced for smaller machinery spaces. The amount of reduction needs to be determined on a case-by-case basis. An approach for defining the protection requirements (i.e., duration of protection) for these smaller machinery spaces was also described.		
The report and Appendix A (Instrumentation and Camera Details) are contained in Volume I. Volume II consists of Appendix B (Test Data) and Appendix C (Combustible Boundary Test Data). These appendices are available in paper copy only from the Research and Development Center.		
17. Key Words fire, fire tests, Halon 1301, Halon alternatives, water mist, total flooding, machinery space		18. Distribution Statement This document is available to the U.S. public through the National Technical Information Service, Springfield, VA 22161.
19. Security Class (This Report) UNCLASSIFIED	20. Security Class (This Page) UNCLASSIFIED	21. No of Pages 500
		22. Price

Form DOT F 1700.7 (8/72) Reproduction of form and completed page is authorized.

[This page intentionally left blank.]

EXECUTIVE SUMMARY

The firefighting capabilities of the state-of-the-art water mist fire suppression systems were evaluated in smaller ($\sim 100 \text{ m}^3$) machinery space applications. The primary objective of this investigation was to evaluate the applicability of the International Maritime Organization's (IMO) test protocol and design requirements to smaller machinery spaces and to machinery spaces with combustible boundaries.

In December 1994, the IMO Maritime Safety Committee approved guidelines for alternative arrangements for halon fire extinguishing systems (MSC Circular 668) [1]. Annex B of the guidelines provides an interim test method for evaluating equivalent water-based fire extinguishing systems for Category A machinery spaces and cargo pump rooms. Since the development of these guidelines, numerous research programs [2, 3, 4] have demonstrated that a properly designed and tested water mist fire suppression system can provide effective protection of Category A machinery spaces. These tests have suggested that smaller spaces should be easier to protect due to water mist's dependence on oxygen depletion to extinguish obstructed fires. The concern for these smaller spaces is whether any of the strict design requirements for larger spaces (i.e., duration of protection) can be reduced to achieve a lighter, less costly system.

Machinery spaces regulated under Sub-chapter T and K of Title 46 of the Code of Federal Regulations and IMO's High Speed Craft (HSC) code may be constructed with combustible boundaries. Therefore, combustible boundaries needed to be evaluated in assessing the extinguishment capabilities of water mist fire suppression systems in smaller machinery spaces. The goal of this effort was to determine appropriate protection requirements for smaller spaces and spaces with combustible boundaries. This work was performed under a research and development project for the Life Saving and Fire Safety Standards Division (G-MSE-4) of Coast Guard Headquarters.

The fire suppression capabilities of five commercially available water mist systems (Chemetron, Fike, Grinnell, Fogtec, and the U.S. Navy's water mist system) were evaluated in a

machinery space with nominal dimensions of 5 m x 7 m x 3 m using three ventilation conditions (closed compartment, a naturally ventilated compartment with a 1.7 m² vent opening, and a compartment with forced ventilation 25 m³/min). The five water mist systems were each capable of extinguishing 9 out of 15 of the test fires included in this evaluation. Degradation in the performance of each system's capabilities were observed primarily during the tests conducted with forced ventilation.

A steady state extinguishment model developed during a previous investigation was used to analyze and explain the results of these tests. The model was used to predict the critical fire size for the three ventilation conditions included in this evaluation. The critical fire size is defined as the smallest fire that will reduce the oxygen concentration in the space due to consumption of the oxygen by the fire and a dilution of the oxygen with water vapor to the Limiting Oxygen Index (LOI) of the fuel. These critical fire size predictions helped explain which fires could not be extinguished.

The model was capable of accurately predicting the steady state compartment temperatures and extinguishment times for the spray fire scenarios but had difficulty predicting the results of the pan fire scenarios. Throughout this test series, the pan fires were more difficult to extinguish than spray fires of a given size. This is believed to be the result of a reduction in burning rate caused by the lower oxygen concentrations in the space. If a reduced burning rate (50 percent of the estimated ambient value) is applied to these results, the model predictions become similar to those measured during the tests.

Three of the water mist systems were tested against three different boundary materials to evaluate performance of water mist technologies against combustible boundaries. The initiating spray fire used during these tests (250 kW) was one of the more difficult fires to extinguish during the system capabilities evaluation. However, this initiating fire was sufficient to ignite a significant amount of the combustible boundary material. The combustion of the boundary material increased the fire size (higher heat release rate) making them easier to extinguish. Consequently, all of the combustible boundary fires were extinguished during this evaluation. In

only one test did fire burn through the combustible material. This test with its unexplainable variance was viewed as an anomaly in the data, and is believed not to alter the conclusion. In general, combustible boundaries do not pose a significant challenge to water mist systems.

The final objective of this investigation was to determine if the current system design requirements (primarily duration of protection) can be reduced for water mist systems applied to smaller machinery spaces. This would result in a lighter, less costly system. The results of these tests suggest that the current IMO design requirements can be reduced for smaller machinery spaces. The amount of reduction needs to be based on the size/volume of the protected area, as well as on the ventilation conditions in the space. An approach for determining these requirements is also described.

Table of Contents

	Page
EXECUTIVE SUMMARY.....	v
APPENDIX B – TEST DATA.....	B-1
APPENDIX C – COMBUSTIBLE BOUNDARY TEST DATA	C-1

[Appendices B and C are available in paper copy only through the U.S. Coast Guard Research and Development Center.]

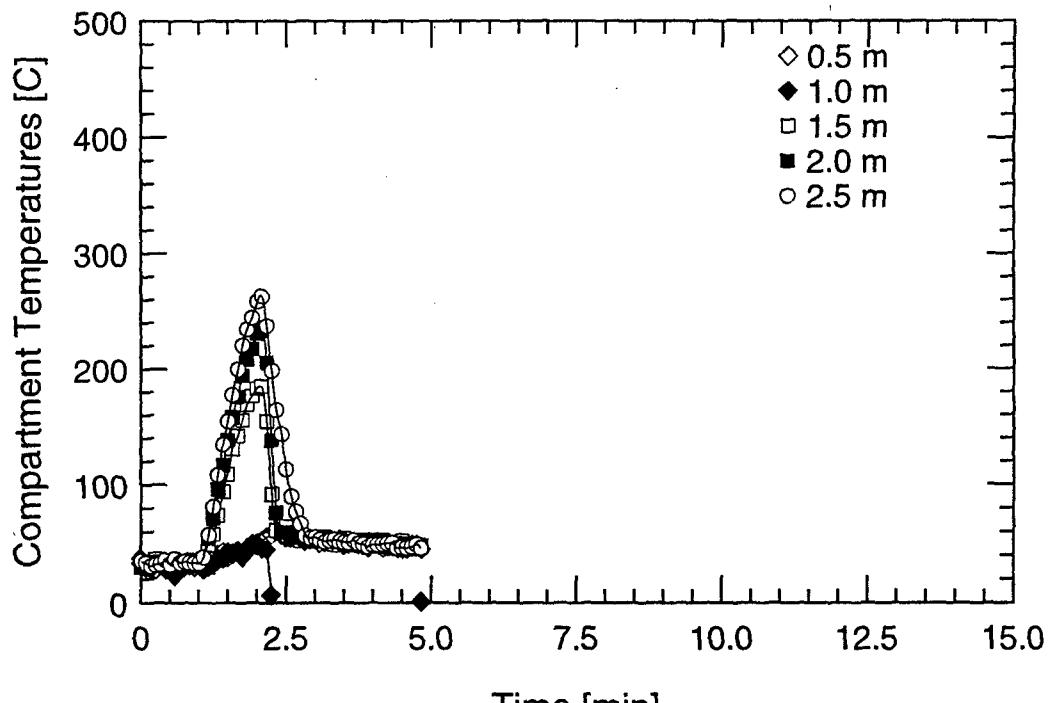
[This page intentionally left blank.]

APPENDIX B - TEST DATA

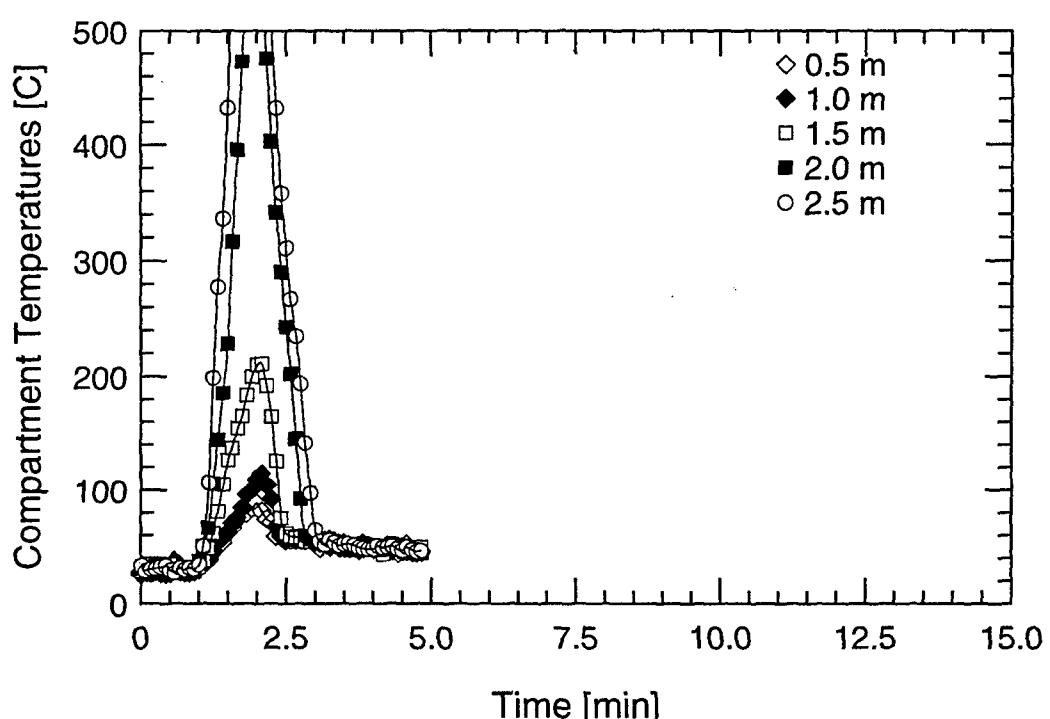
Table of Contents

Test #	Water Mist System	Fire Scenario	Ventilation Condition	Page #
1	Navy	1 MW Spray	Closed Compartment	B-4
2	Navy	1 MW Spray	1.7 m ² Vent	B-10
3	Navy	1 MW Spray	Forced	B-16
4	Navy	0.5 MW Spray	Closed Compartment	B-22
5	Navy	0.5 MW Spray	1.7 m ² Vent	B-28
6	Navy	0.5 MW Spray	Forced	B-34
7	Navy	0.25 MW Spray	Closed Compartment	B-40
8	Navy	0.25 MW Spray	1.7 m ² Vent	B-46
9	Navy	0.25 MW Spray	Forced	B-52
10	Grinnell AM4	1 MW Spray	Closed Compartment	B-58
11	Grinnell AM4	1 MW Spray	1.7 m ² Vent	B-64
12	Grinnell AM4	1 MW Spray	Forced	B-70
13	Grinnell AM4	0.5 MW Spray	Closed Compartment	B-76
14	Grinnell AM4	0.5 MW Spray	1.7 m ² Vent	B-82
15	Grinnell AM4	0.5 MW Spray	Forced	B-88
16	Grinnell AM4	0.25 MW Spray	Closed Compartment	B-94
17	Grinnell AM4	0.25 MW Spray	1.7 m ² Vent	B-100
18	Grinnell AM4	0.41 m ² Pan	Closed Compartment	B-106
19	Grinnell AM4	0.41 m ² Pan	1.7 m ² Vent	B-112
20	Grinnell AM4	0.41 m ² Pan	Forced	B-118
21	Grinnell AM4	0.25 m ² Pan	Closed Compartment	B-124
22	Grinnell AM4	0.5 MW Spray	1.7 m ² Vent	B-130
23	Fogtech DK6	1 MW Spray	Closed Compartment	B-136
24	Fogtech DK6	1 MW Spray	1.7 m ² Vent	B-142
25	Fogtech DK6	1 MW Spray	Forced	B-148
26	Fogtech DK6	0.5 MW Spray	Closed Compartment	B-154
27	Fogtech DK6	0.5 MW Spray	1.7 m ² Vent	B-160
28	Fogtech DK6	0.5 MW Spray	Forced	B-166
29	Fogtech DK6	0.25 MW Spray	Closed Compartment	B-172
30	Fogtech DK6	0.25 MW Spray	1.7 m ² Vent	B-178
31	Fogtech DK6	0.41 m ² Pan	Closed Compartment	B-184
32	Fogtech DK6	0.41 m ² Pan	1.7 m ² Vent	B-190
33	Fogtech DK6	0.41 m ² Pan	Forced	B-196
34	Fogtech DK6	0.25 m ² Pan	Closed Compartment	B-202
35	Fogtech DK6	0.25 m ² Pan	1.7 m ² Vent	B-208
36	Chemetron ESK 1215	1 MW Spray	Closed Compartment	B-214
37	Chemetron ESK 1215	1 MW Spray	1.7 m ² Vent	B-220
38	Chemetron ESK 1215	1 MW Spray	Forced	B-226
39	Chemetron ESK 1215	0.5 MW Spray	Closed Compartment	B-232

Test #	Water Mist System	Fire Scenario	Ventilation Condition	Page #
40	Chemetron ESK 1215	0.5 MW Spray	1.7 m ² Vent	B-238
41	Chemetron ESK 1215	0.5 MW Spray	Forced	B-244
42	Chemetron ESK 1215	0.25 MW Spray	Closed Compartment	B-250
43	Chemetron ESK 1215	0.25 MW Spray	1.7 m ² Vent	B-256
44	Chemetron ESK 1215	0.41 m ² Pan	Closed Compartment	B-262
45	Chemetron ESK 1215	0.41 m ² Pan	1.7 m ² Vent	B-268
46	Chemetron ESK 1215	0.41 m ² Pan	Forced	B-274
47	Chemetron ESK 1215	0.25 m ² Pan	Closed Compartment	B-280
48	Chemetron ESK 1215	0.25 m ² Pan	1.7 m ² Vent	B-286
49	Chemetron 3/8 BD-3-3W	0.5 MW Spray	1.7 m ² Vent	B-292
50	Chemetron 3/8 BD-3-3W	0.5 MW Spray	Forced	B-298
51	Fike F-1	1 MW Spray	Closed Compartment	B-304
52	Fike F-1	1 MW Spray	1.7 m ² Vent	B-310
53	Fike F-1	1 MW Spray	Forced	B-316
54	Fike F-1	0.5 MW Spray	Closed Compartment	B-322
55	Fike F-1	0.5 MW Spray	1.7 m ² Vent	B-328
56	Fike F-1	0.5 MW Spray	Forced	B-334
57	Fike F-1	0.25 MW Spray	Closed Compartment	B-340
58	Fike F-1	0.25 MW Spray	1.7 m ² Vent	B-346
59	Fike F-1	0.25 MW Spray	1.7 m ² Vent	B-352
60	Fike F-1	0.41 m ² Pan	Closed Compartment	B-358
61	Fike F-1	0.41 m ² Pan	1.7 m ² Vent	B-364
62	Fike F-1	0.41 m ² Pan	Forced	B-370
63	Fike F-1	0.25 m ² Pan	Closed Compartment	B-376
64	Fike F-1	0.25 m ² Pan	1.7 m ² Vent	B-382
65	Navy	0.25 m ² Pan	Closed Compartment	B-388
66	Navy	0.25 m ² Pan	1.7 m ² Vent	B-394
67	Navy	0.41 m ² Pan	Closed Compartment	B-400
68	Navy	0.41 m ² Pan	1.7 m ² Vent	B-406
69	Navy	0.41 m ² Pan	Forced	B-412
70	Navy	Corner - Plywood	1.7 m ² Vent	B-418
71	Navy	Corner - Plywood	1.7 m ² Vent	B-424
72	Navy	Corner - Fiberglass	1.7 m ² Vent	B-430
73	Fogtech DK6	Corner - Plywood	1.7 m ² Vent	B-436
74	Fogtech DK6	Corner - Fiberglass	1.7 m ² Vent	B-442
75	Grinnell AM4	Corner - Plywood	1.7 m ² Vent	B-448
76	Grinnell AM4	Corner - Fiberglass	1.7 m ² Vent	B-454
77	Grinnell AM4	Corner - Fiberglass	1.7 m ² Vent	B-460
78	Free	Corner - Plywood	1.7 m ² Vent	B-466
79	Grinnell AM4	Overhead - Plywood	1.7 m ² Vent	B-472



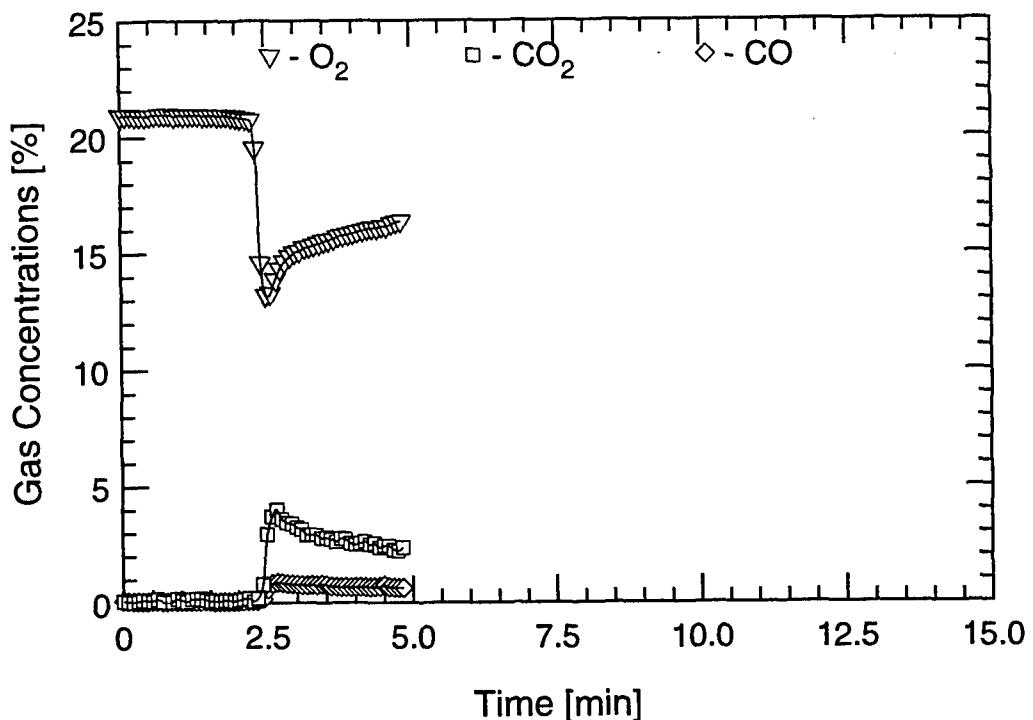
Aft Tree



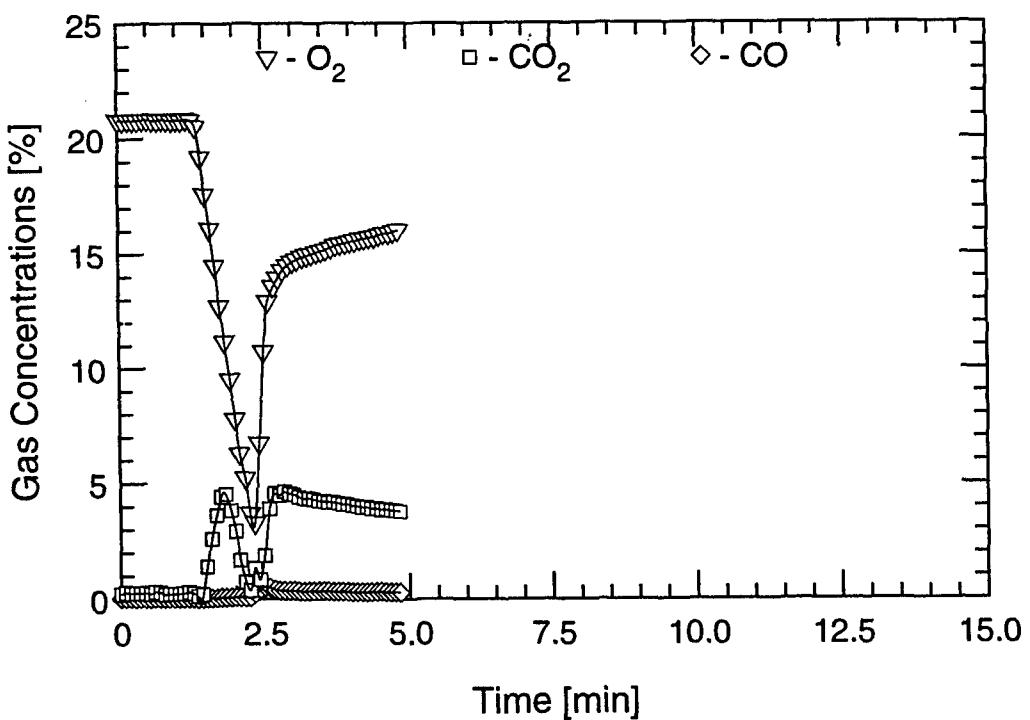
Forward Tree

TEST #1

B-4

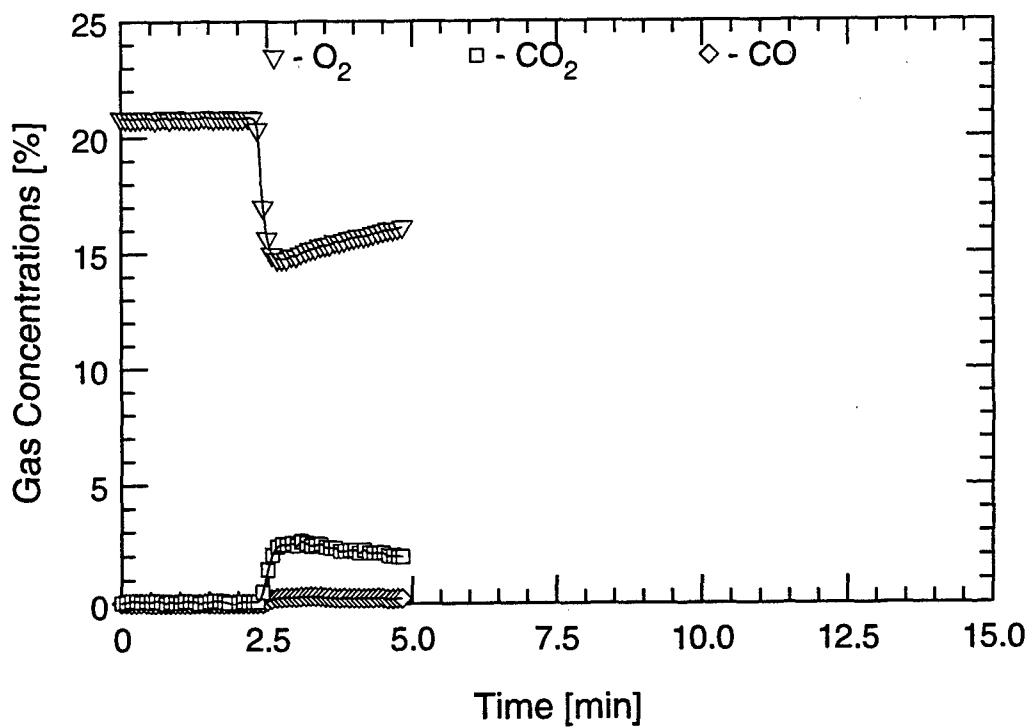


Aft Tree (Low)

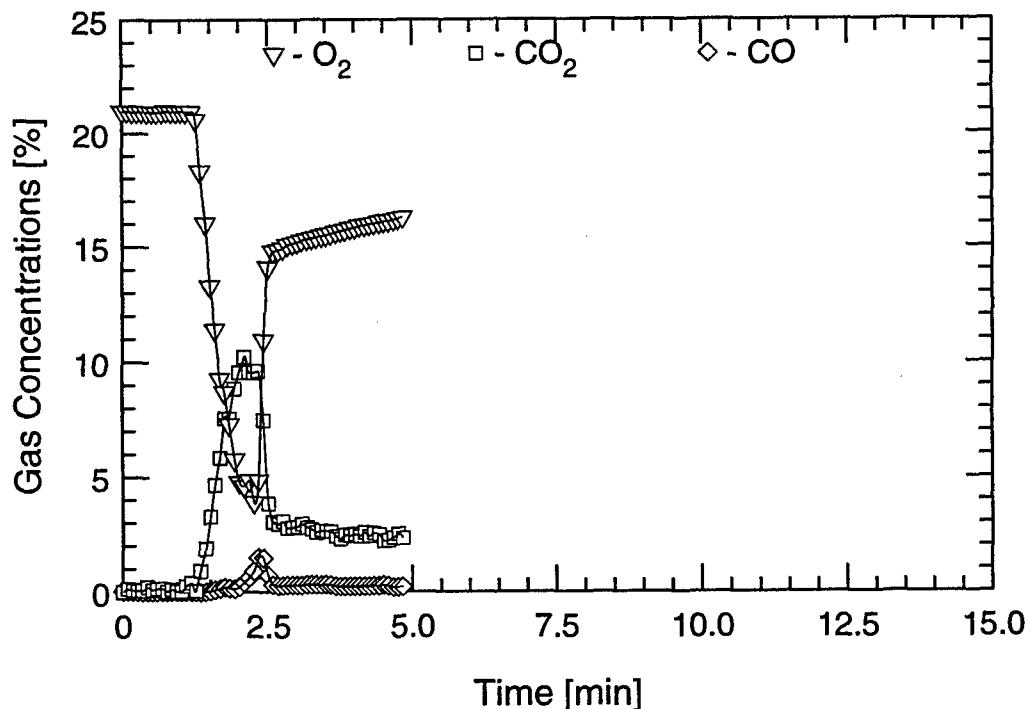


Aft Tree (High)

TEST #1

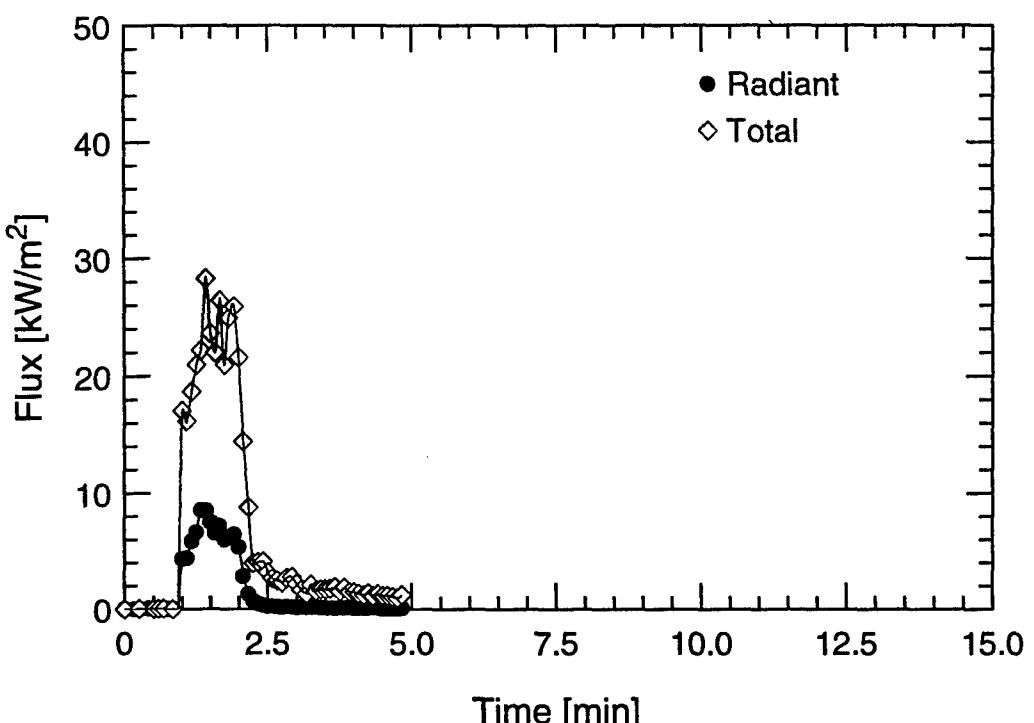


Forward Tree (Low)

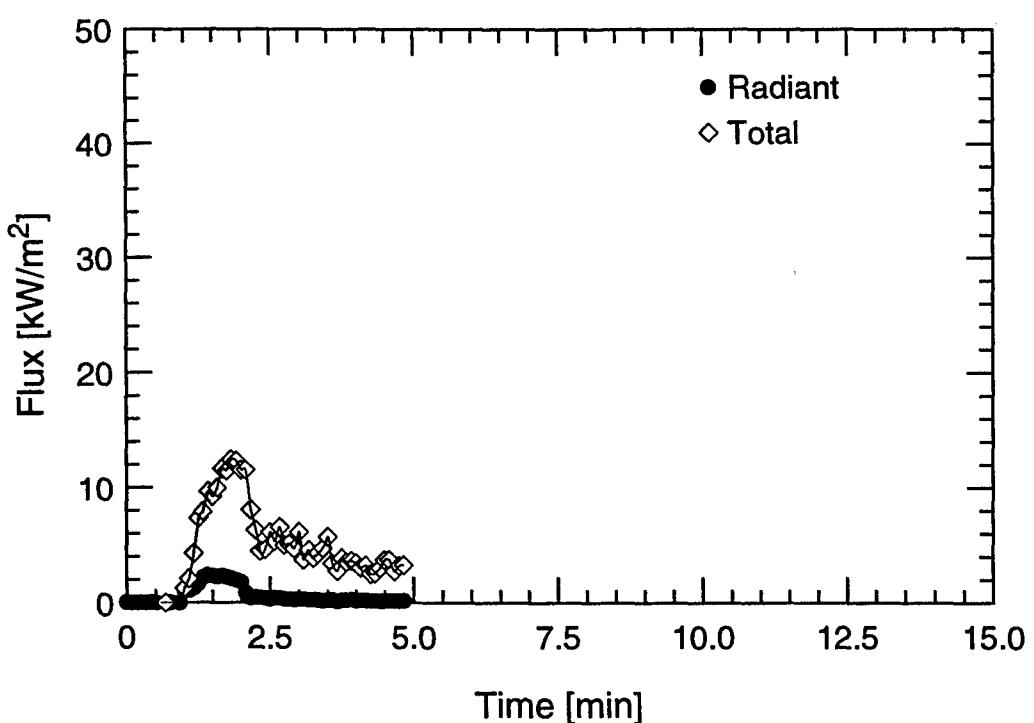


Forward Tree (High)

TEST #1

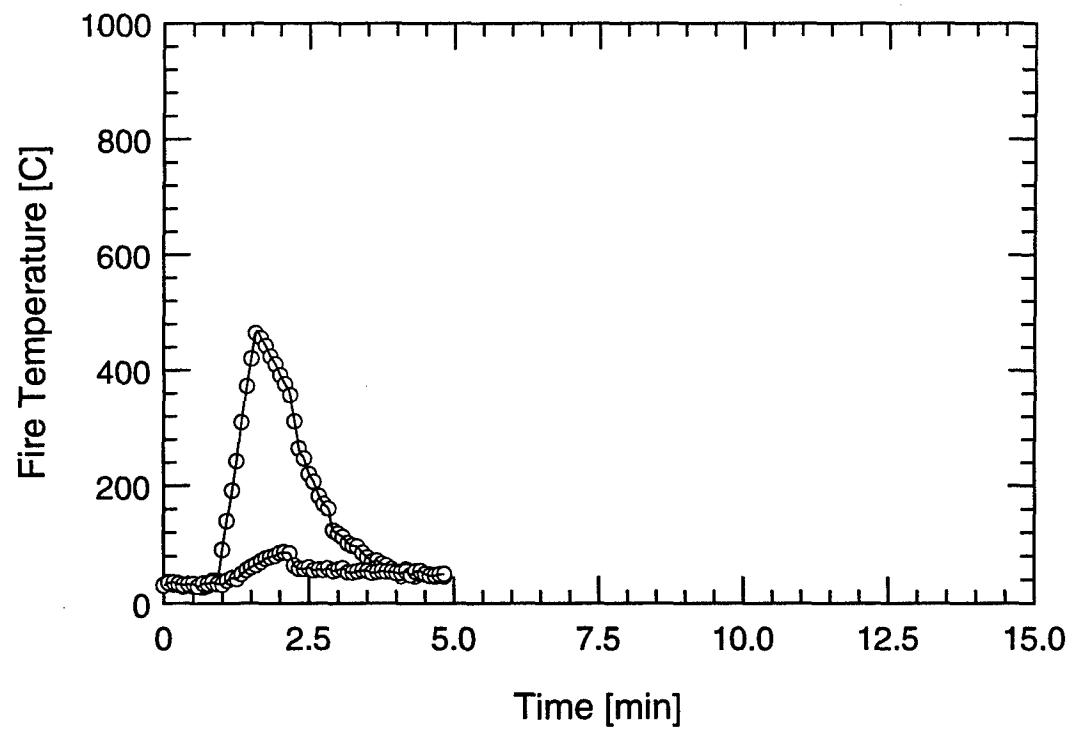


Overhead



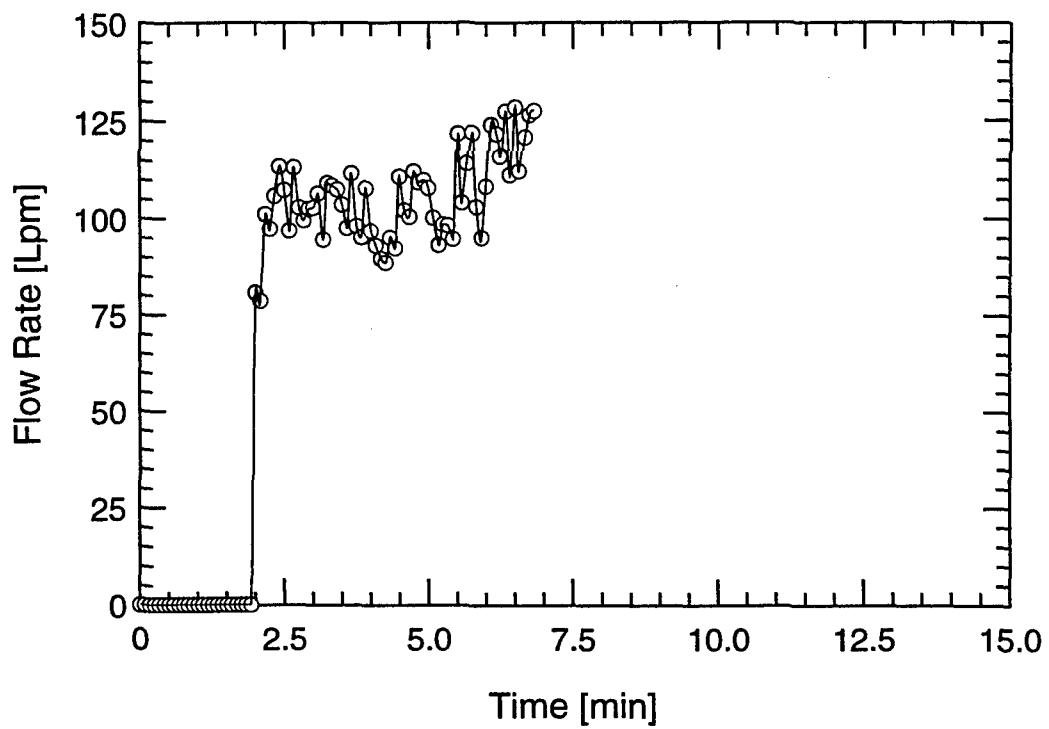
Forward Bulkhead

TEST #1

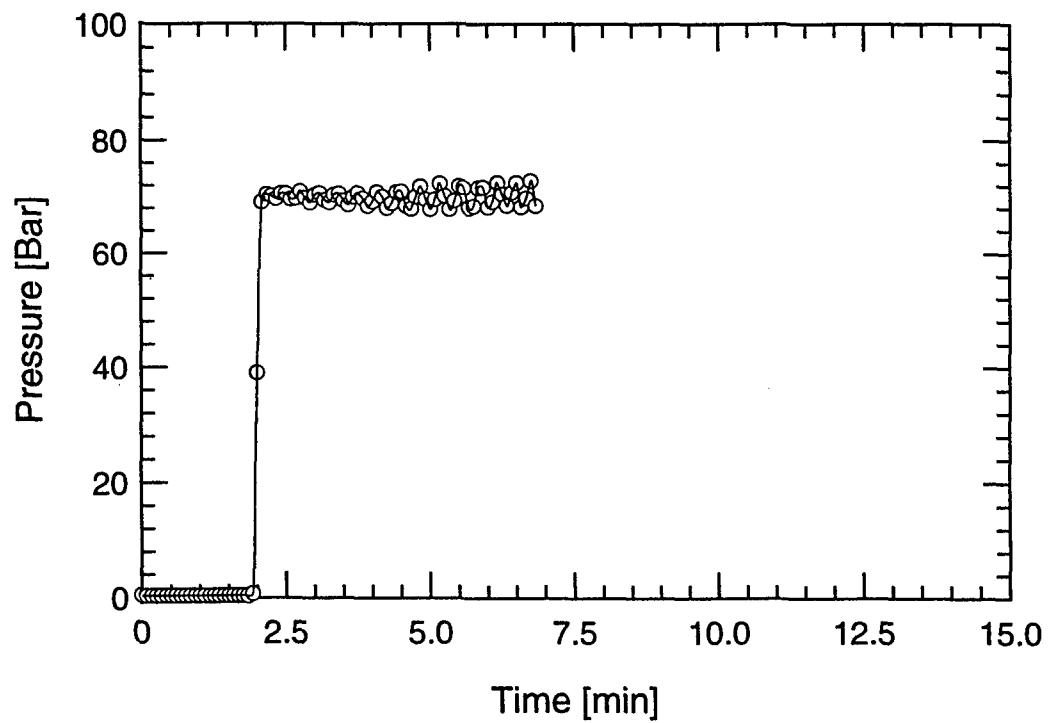


TEST #1

B-8

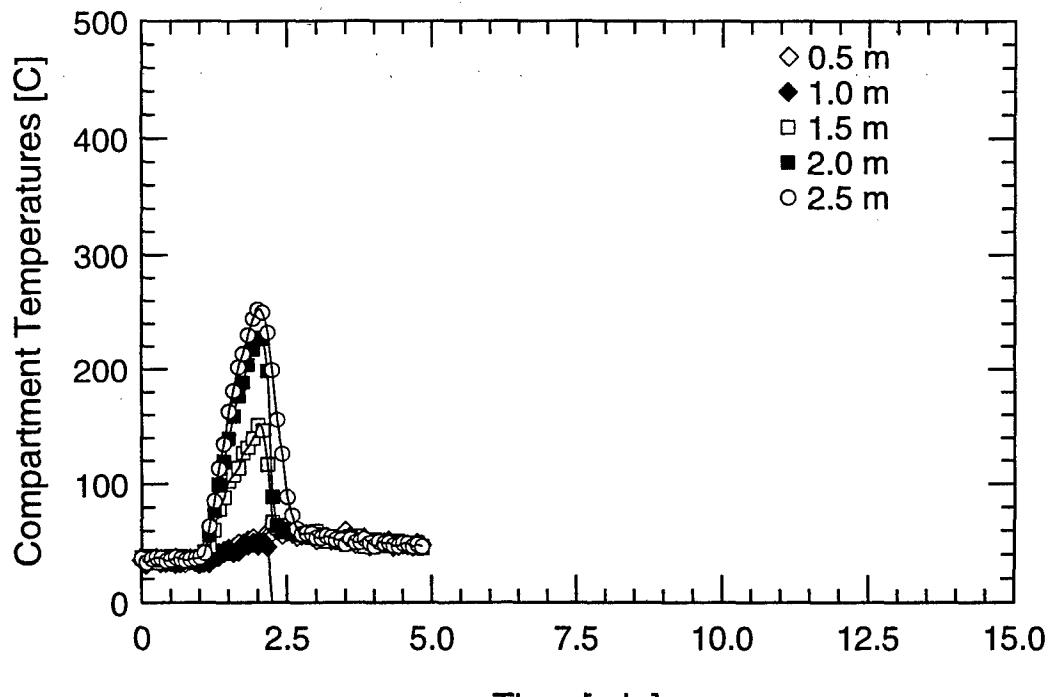


Water Mist System Flow Rate

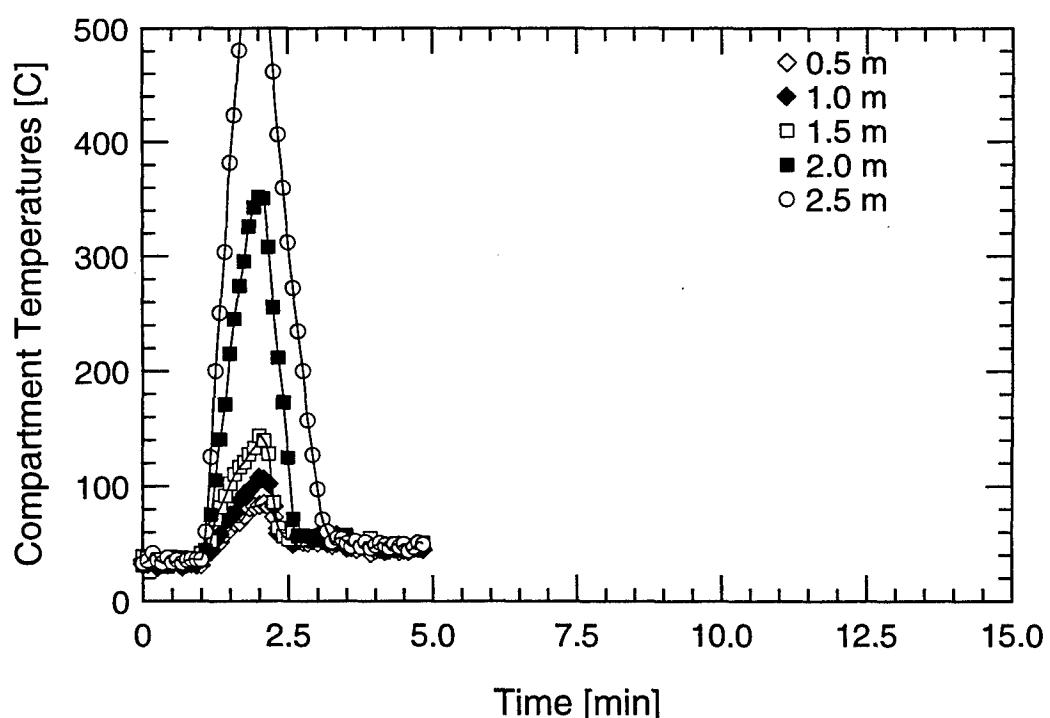


Water Mist System Pressure

TEST #1

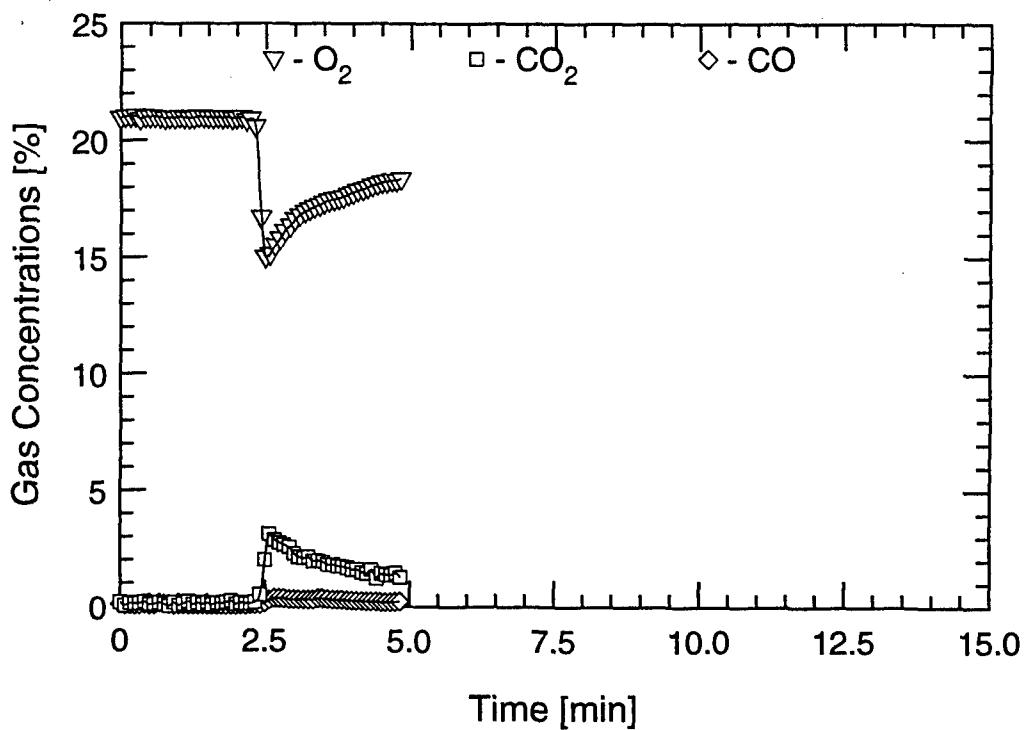


Aft Tree

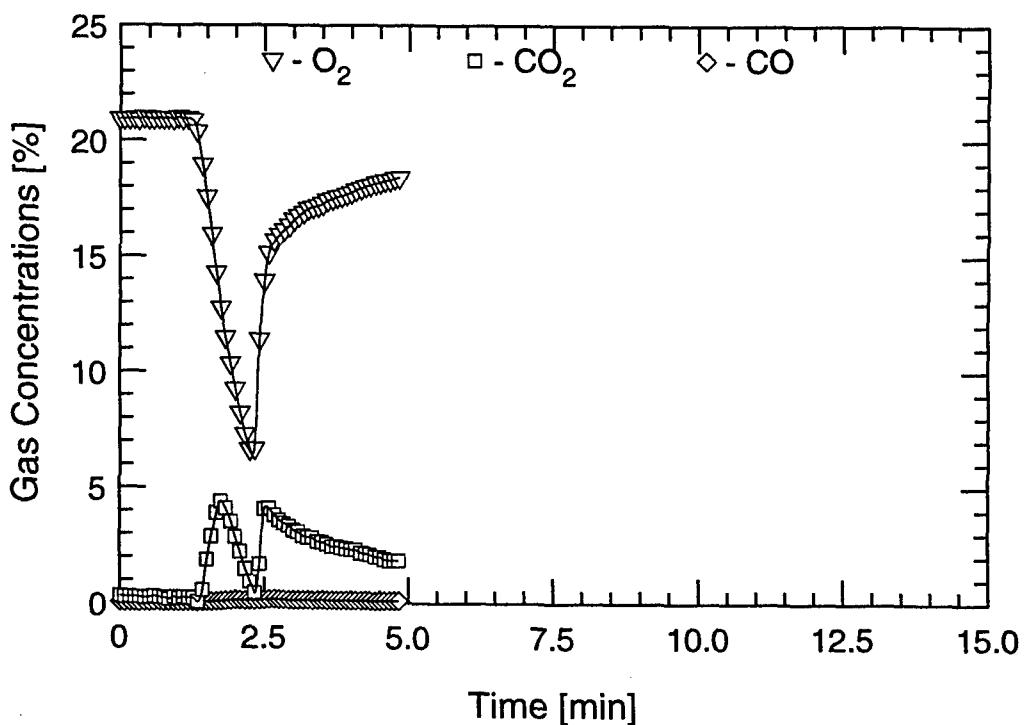


Forward Tree

TEST #2

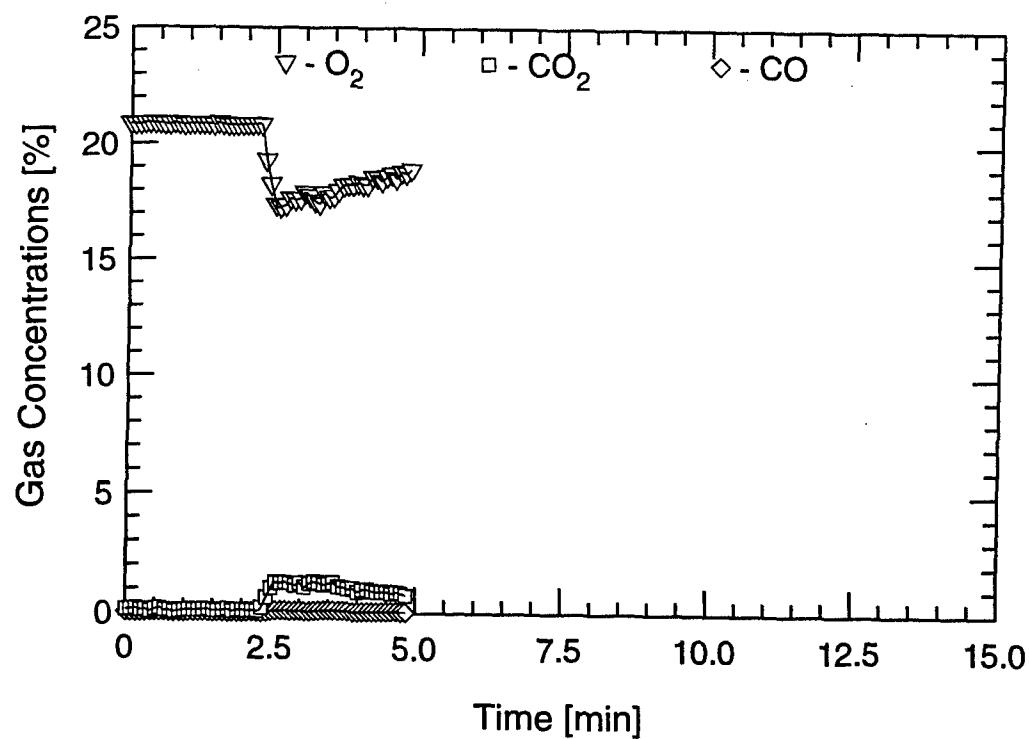


Aft Tree (Low)

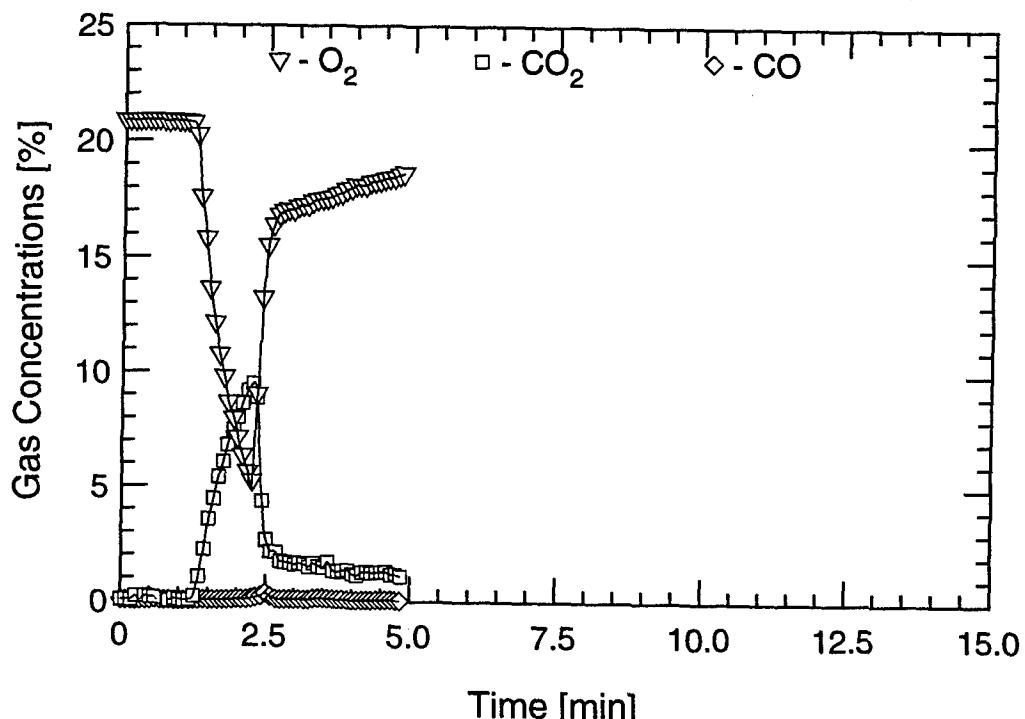


Aft Tree (High)

TEST #2



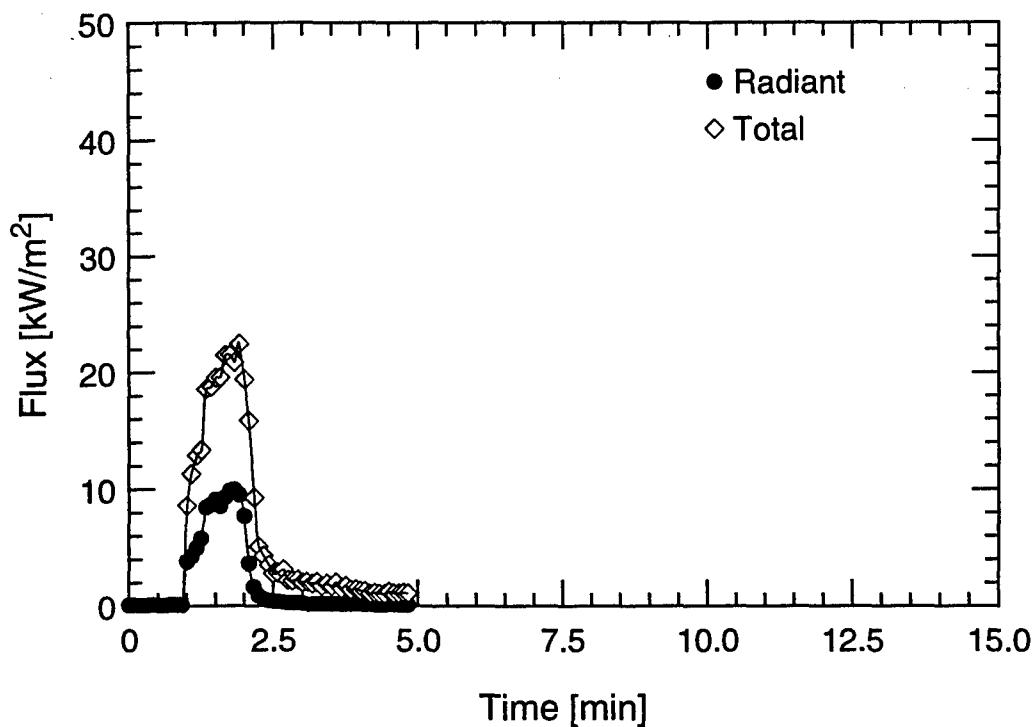
Forward Tree (Low)



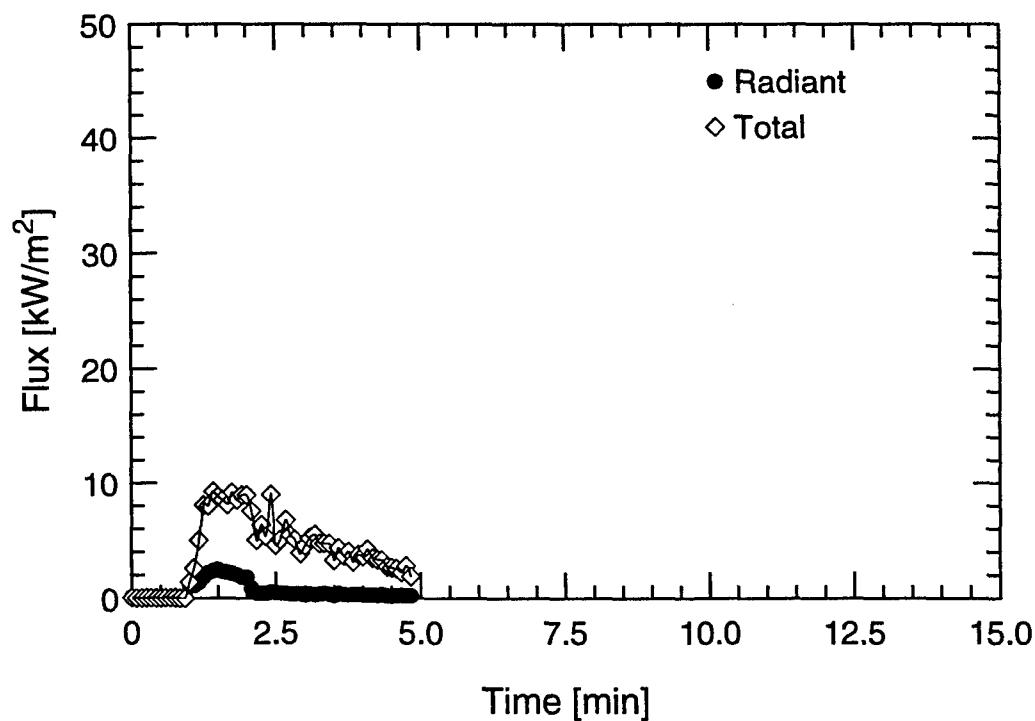
Forward Tree (High)

TEST #2

B-12

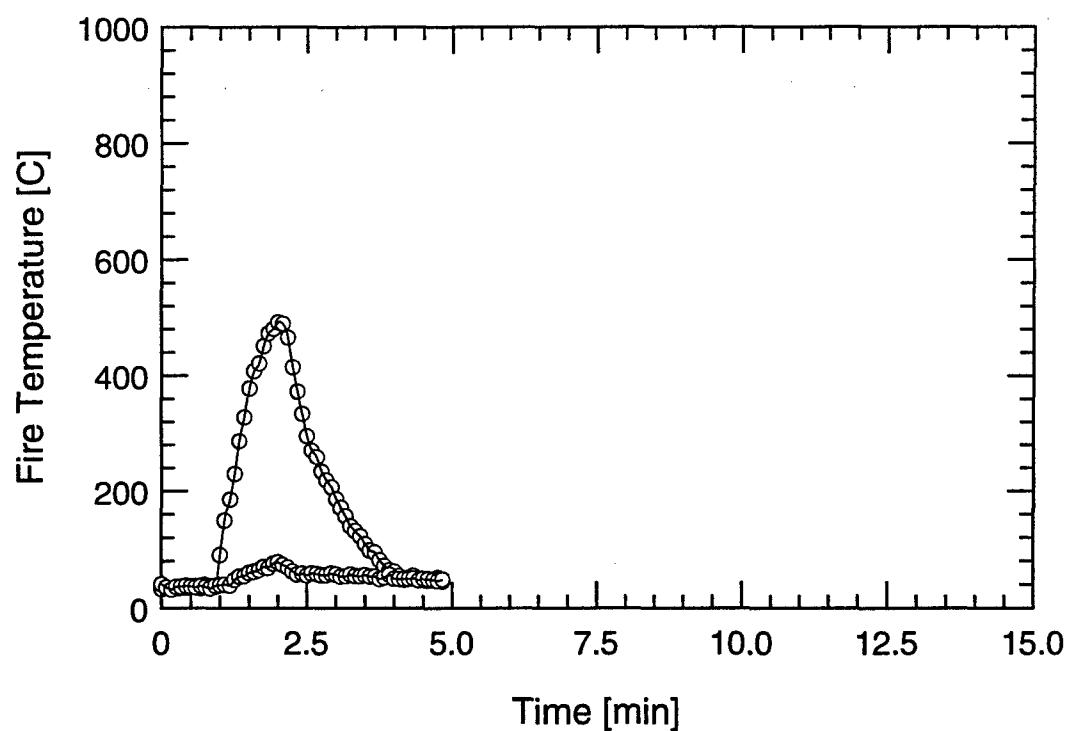


Overhead



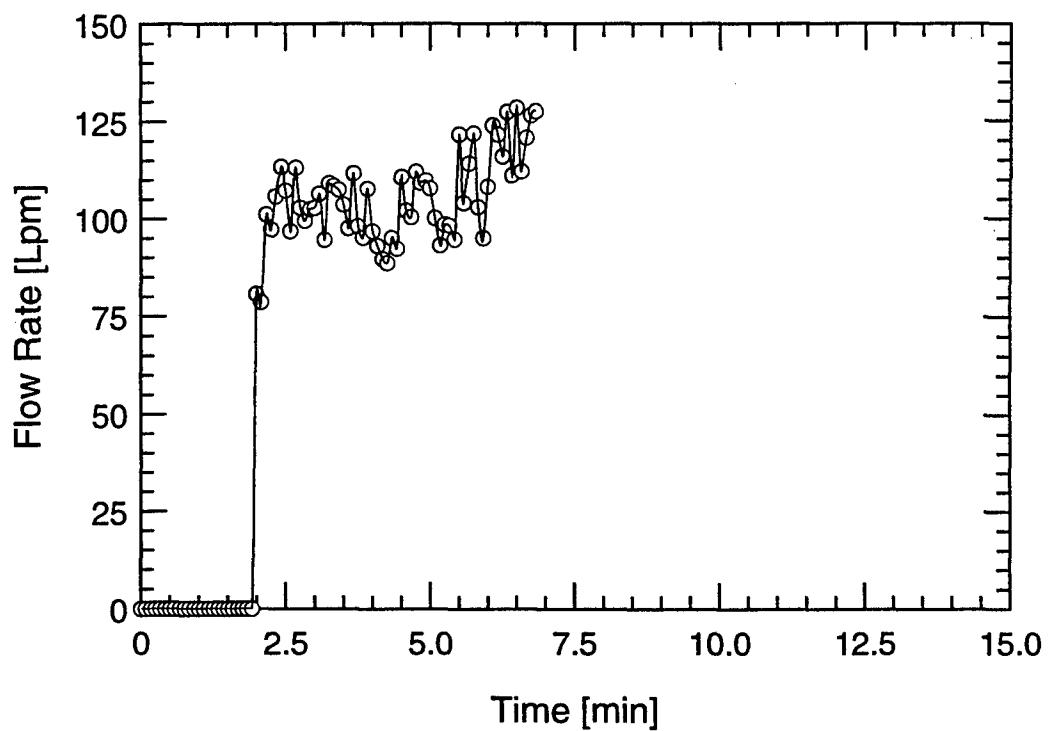
Forward Bulkhead

TEST #2

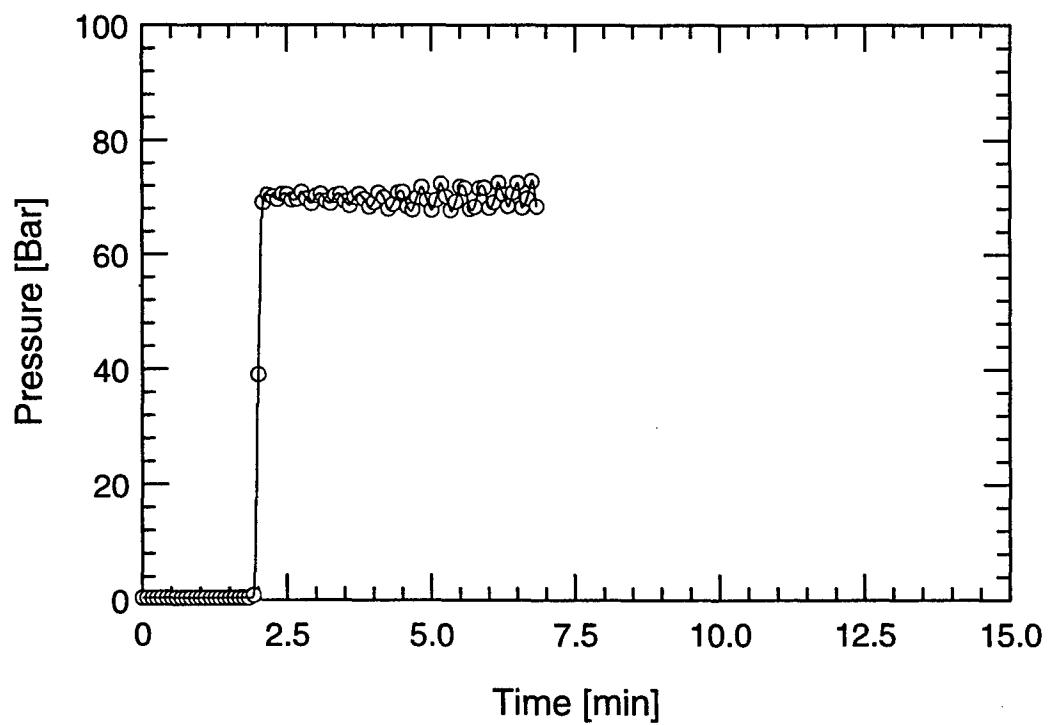


TEST #2

B-14

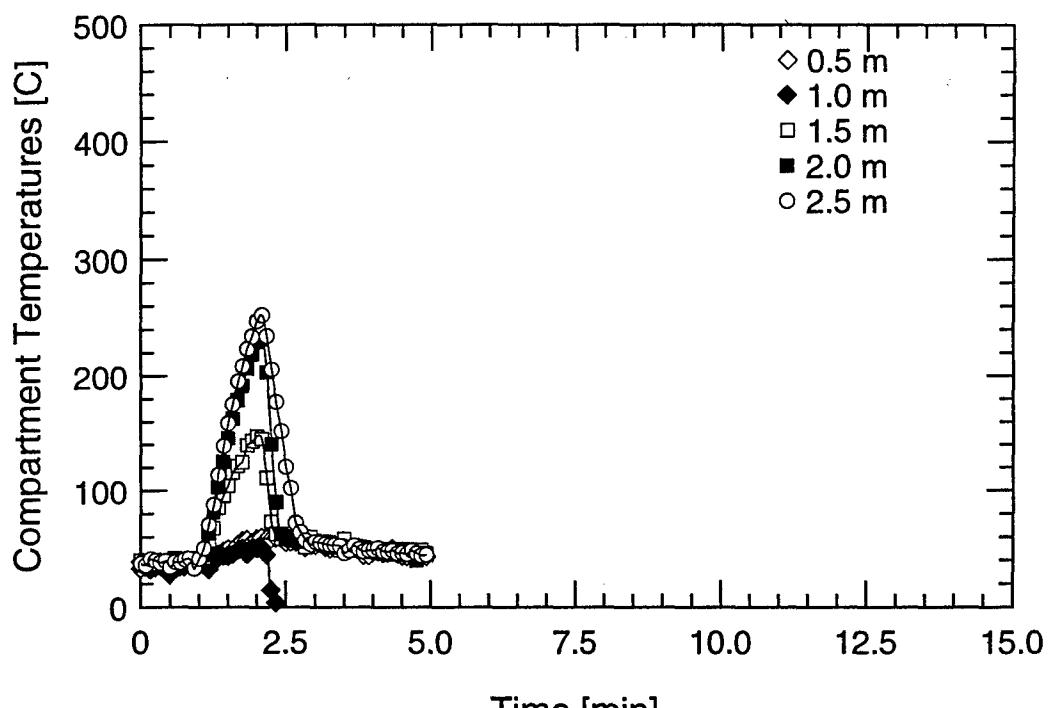


Water Mist System Flow Rate

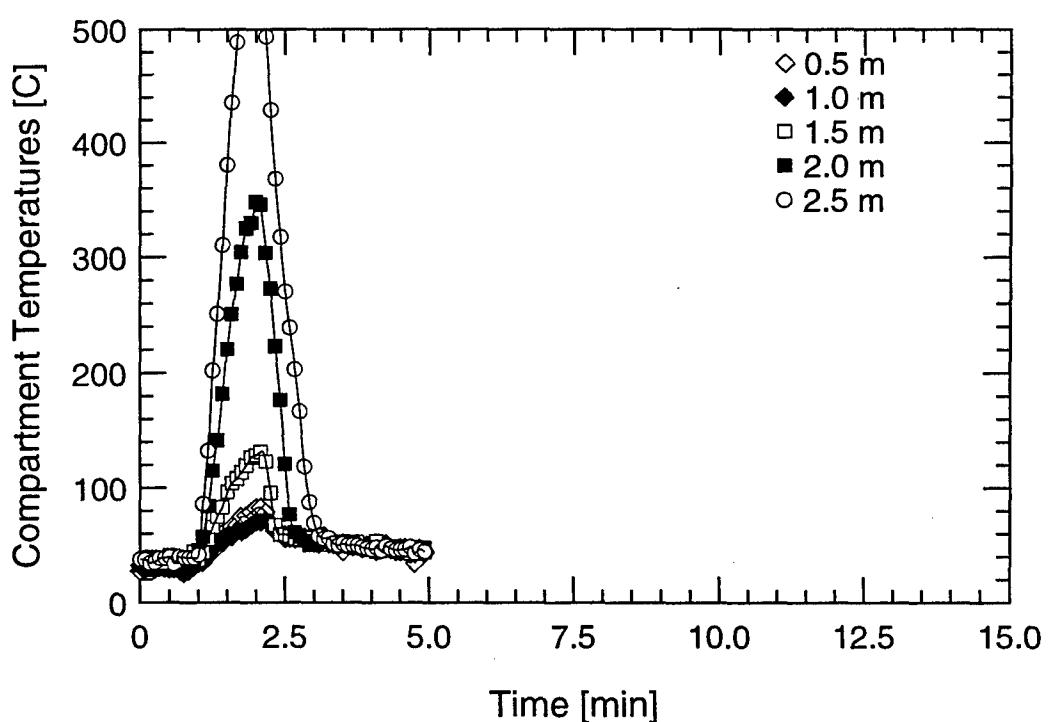


Water Mist System Pressure

TEST #2

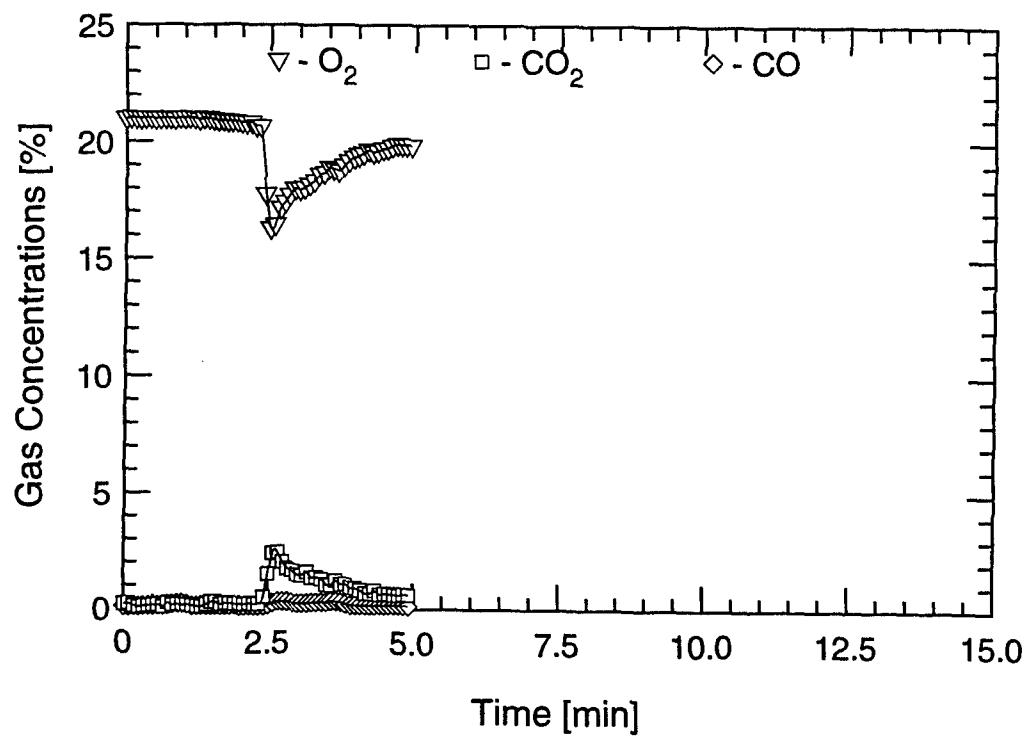


Aft Tree

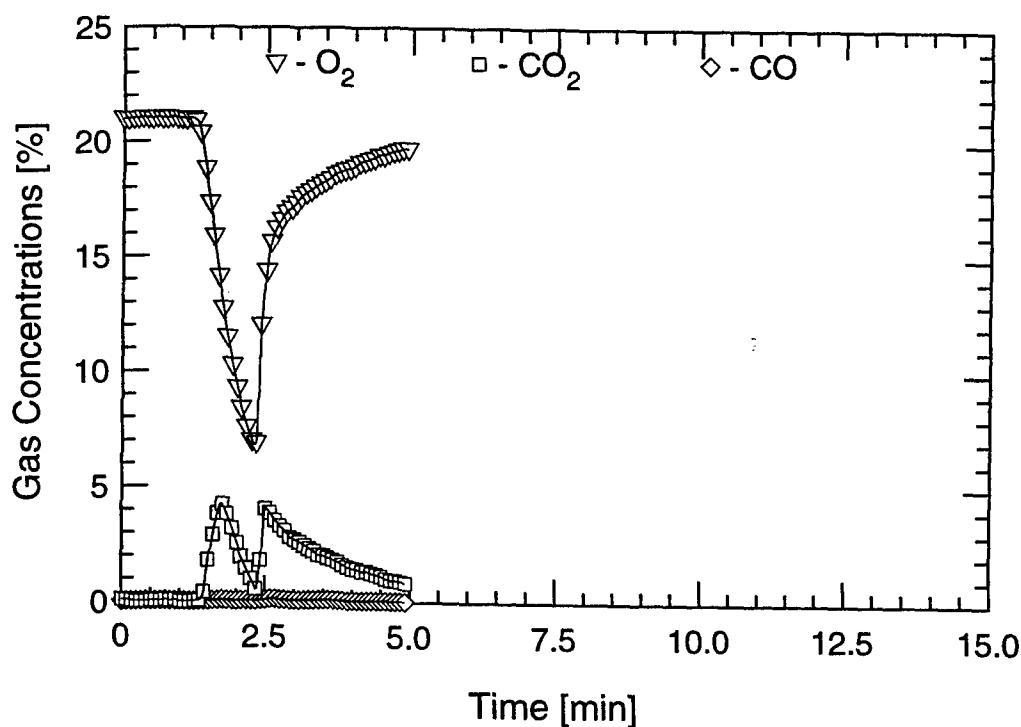


Forward Tree

TEST #3

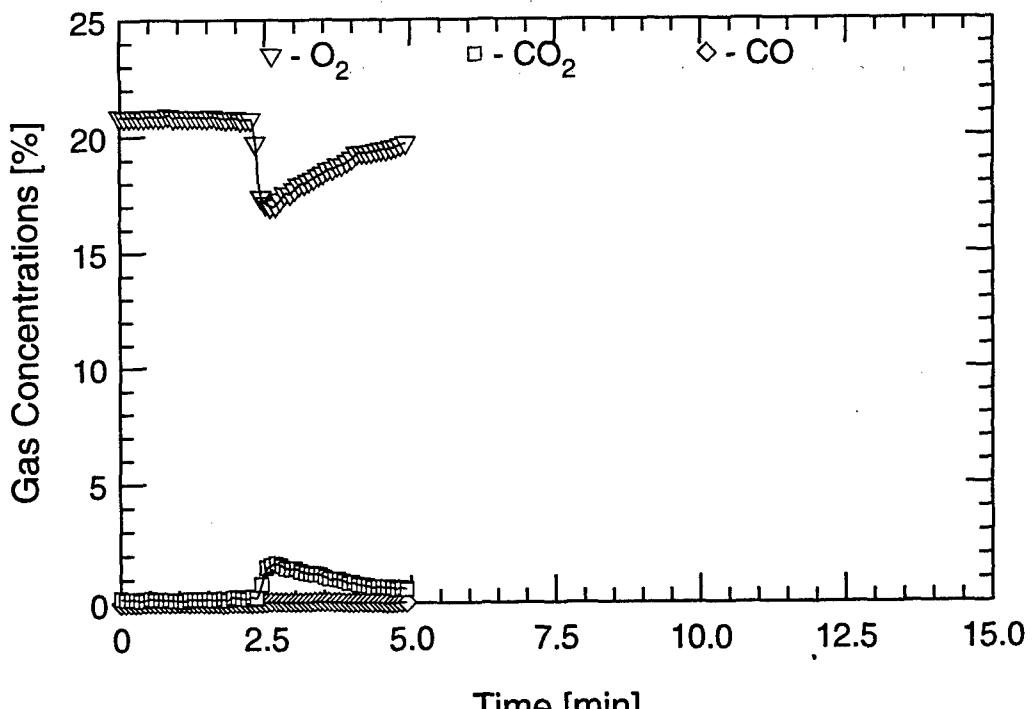


Aft Tree (Low)

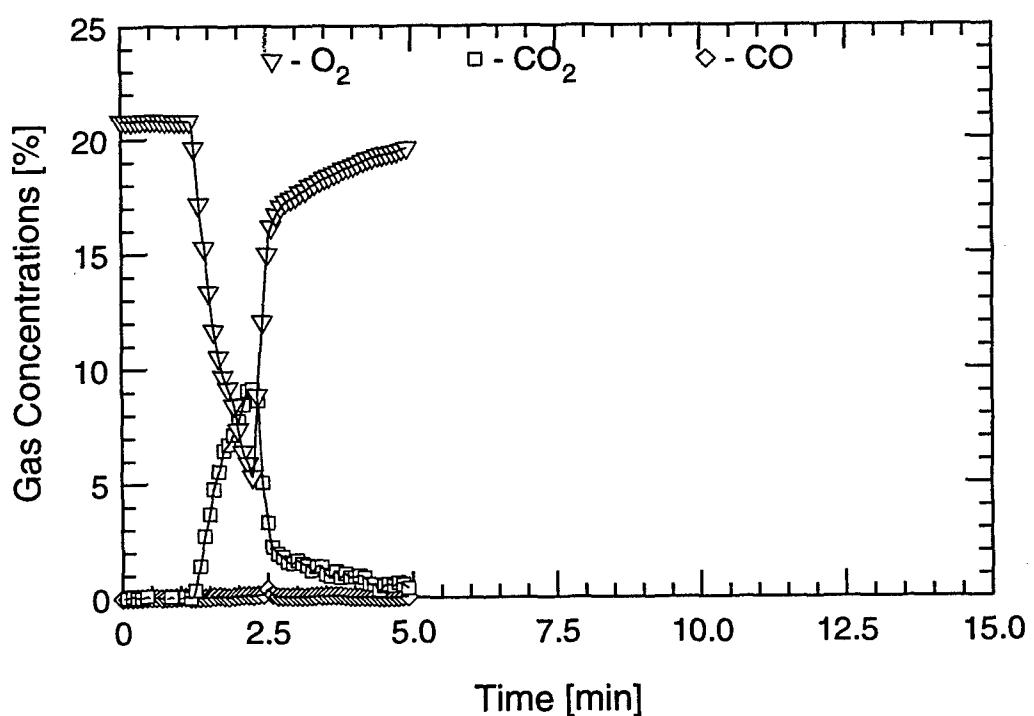


Aft Tree (High)

TEST #3

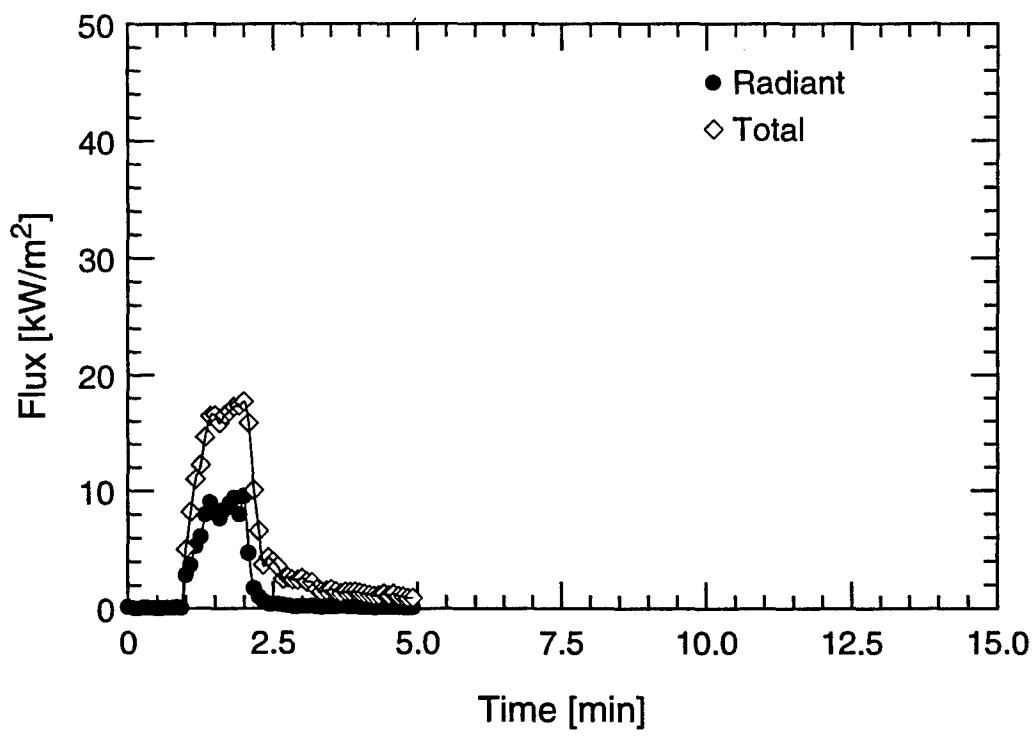


Forward Tree (Low)

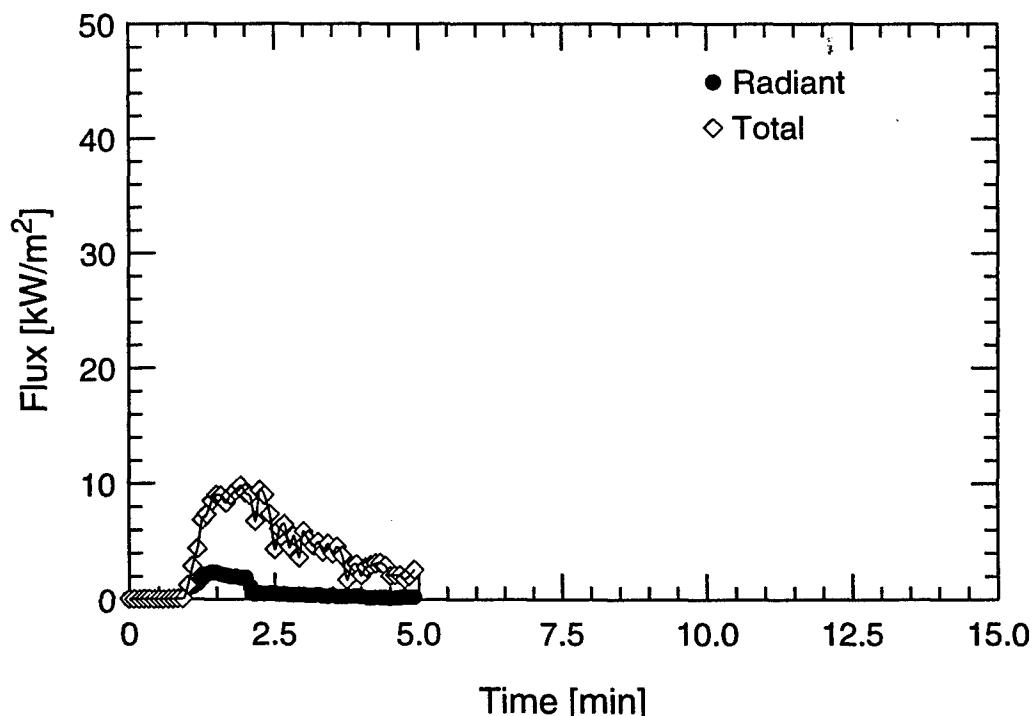


Forward Tree (High)

TEST #3

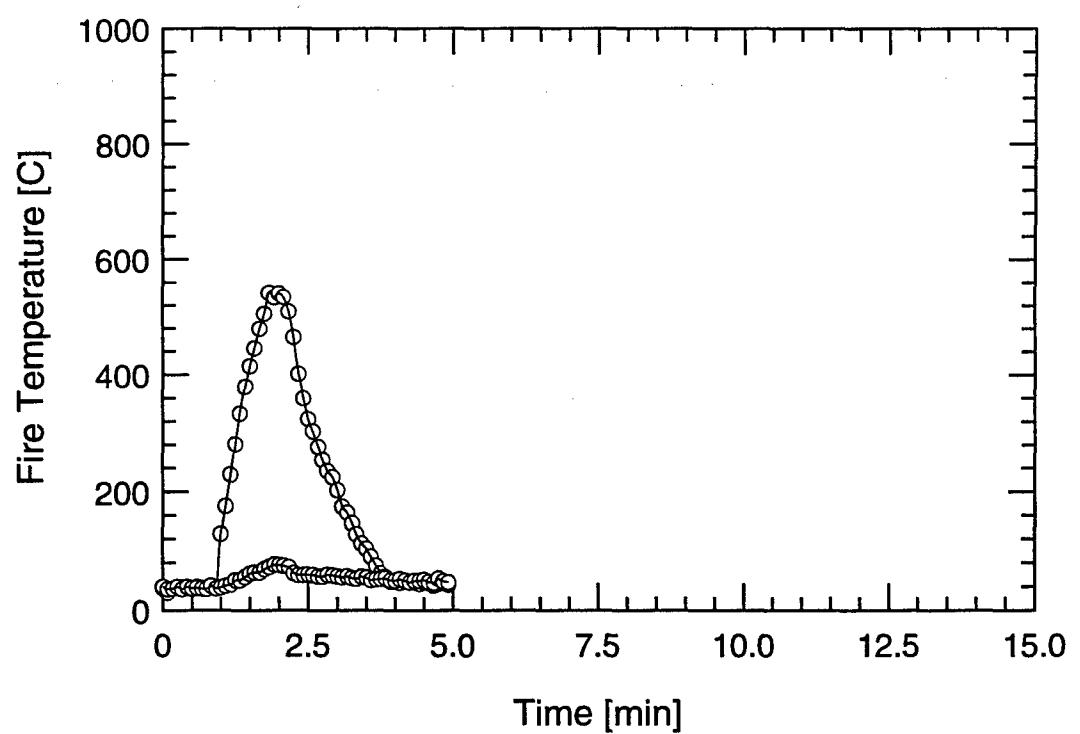


Overhead



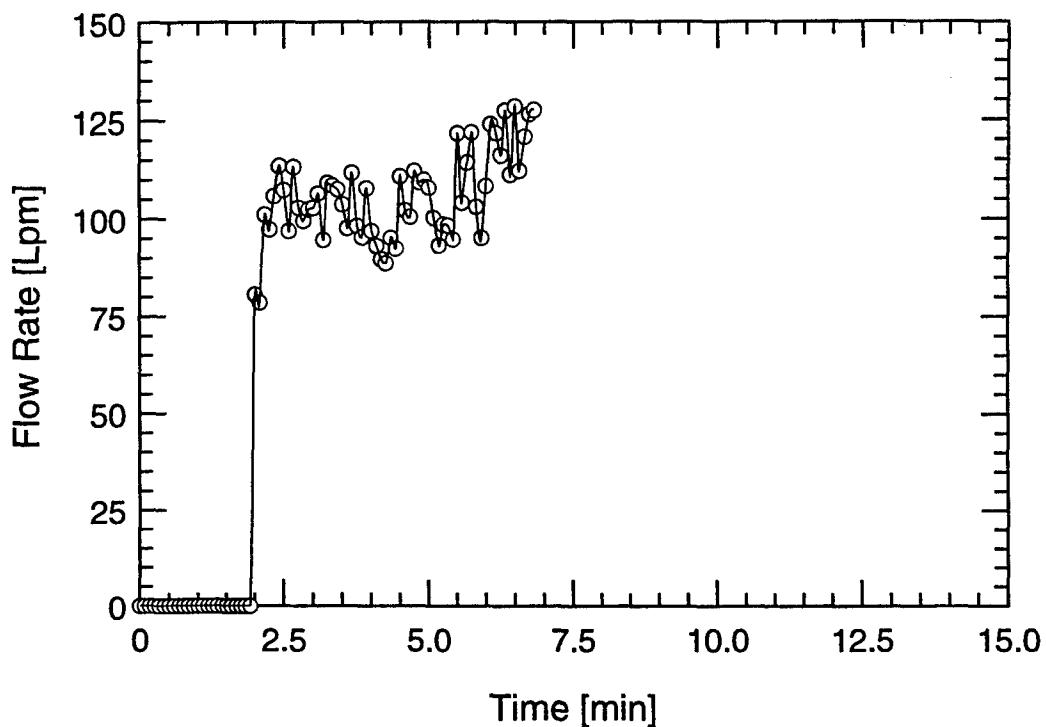
Forward Bulkhead

TEST #3

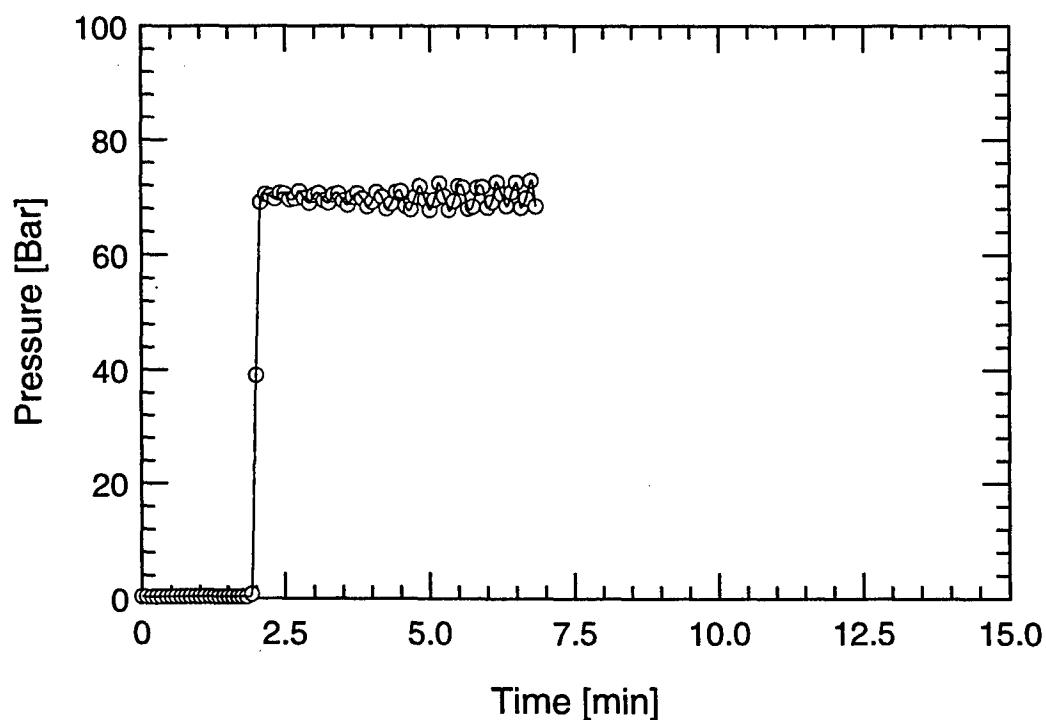


TEST #3

B-20

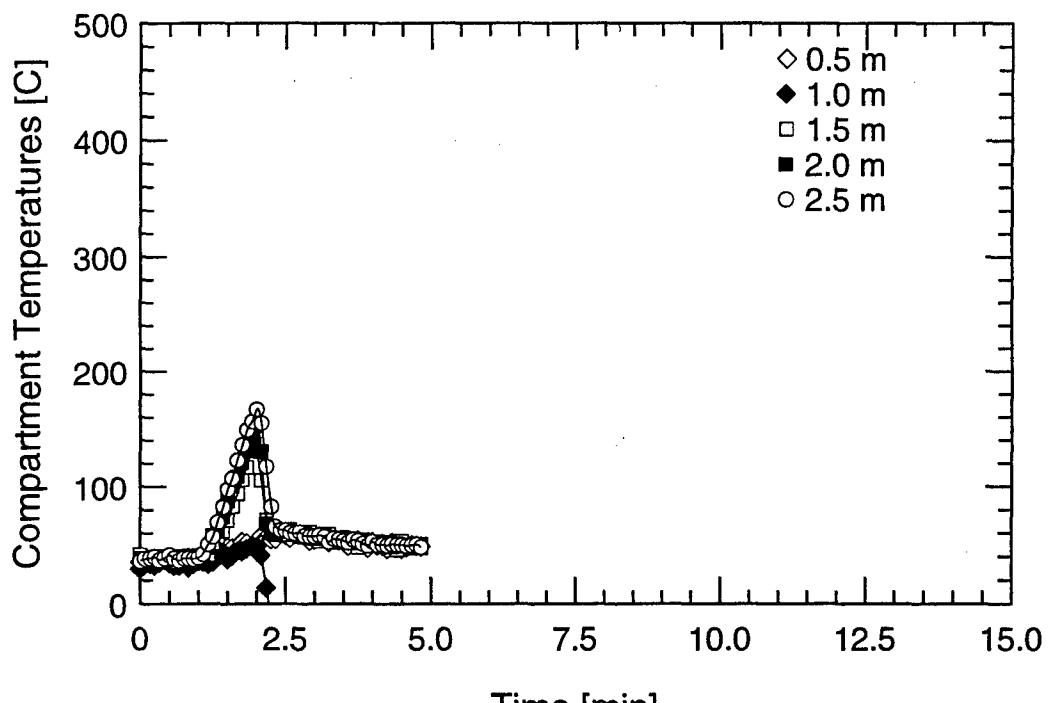


Water Mist System Flow Rate

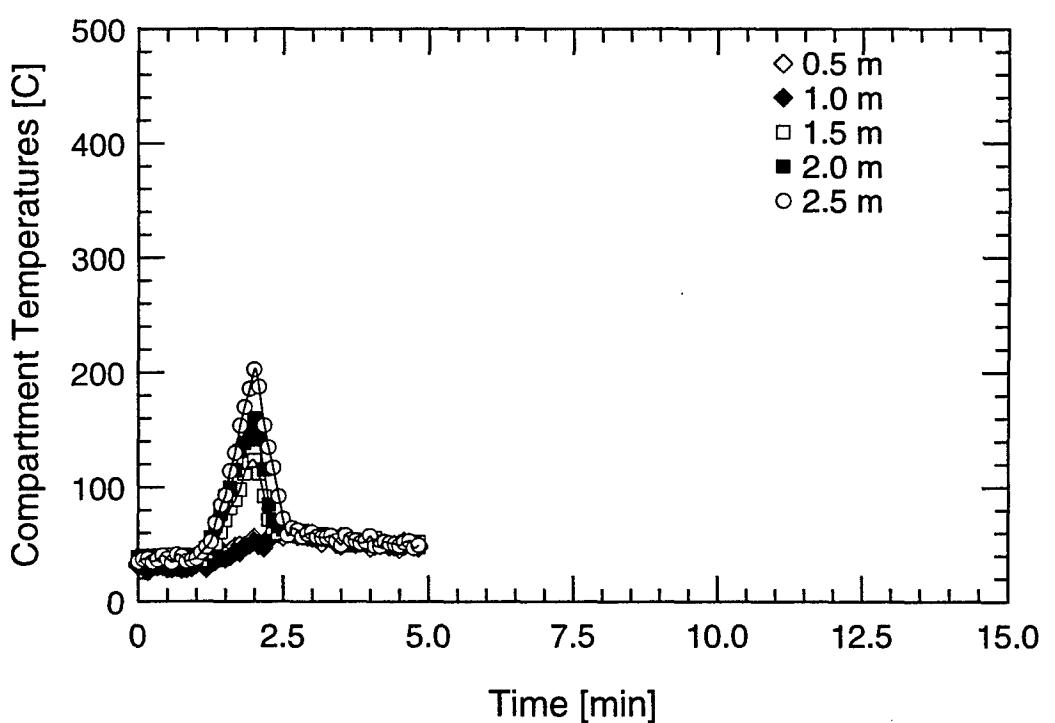


Water Mist System Pressure

TEST #3

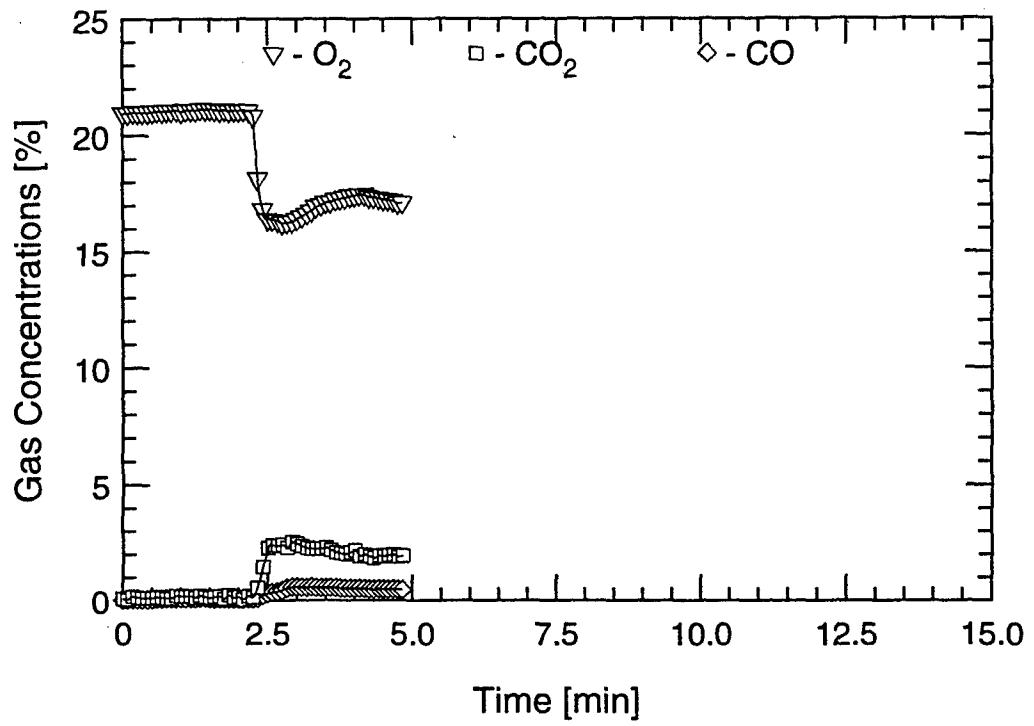


Aft Tree

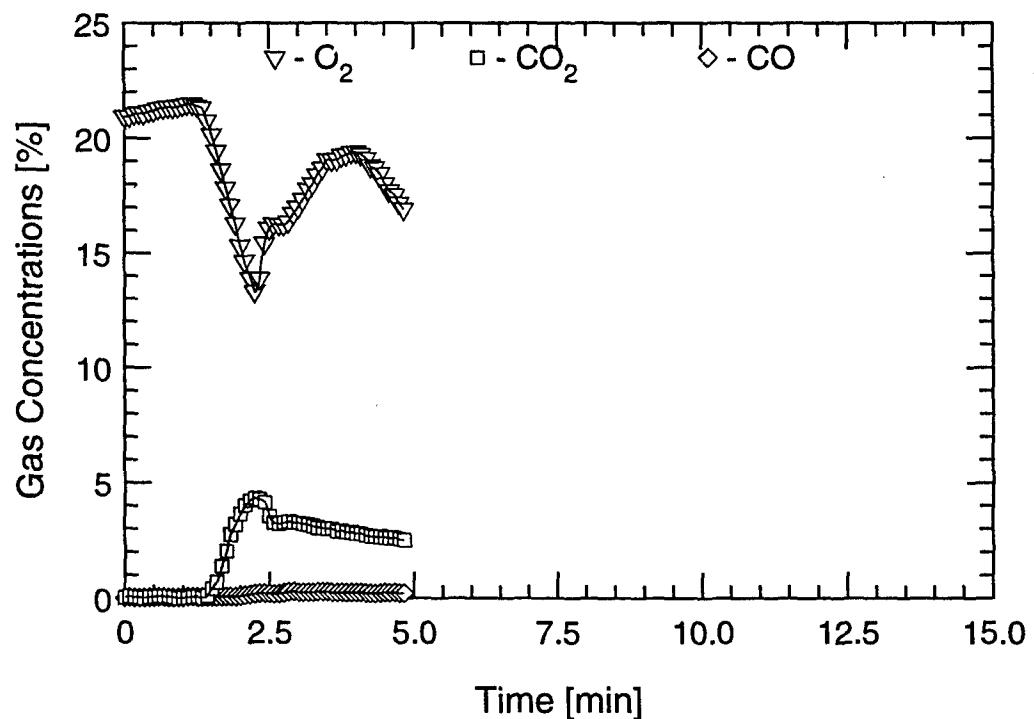


Forward Tree

TEST #4

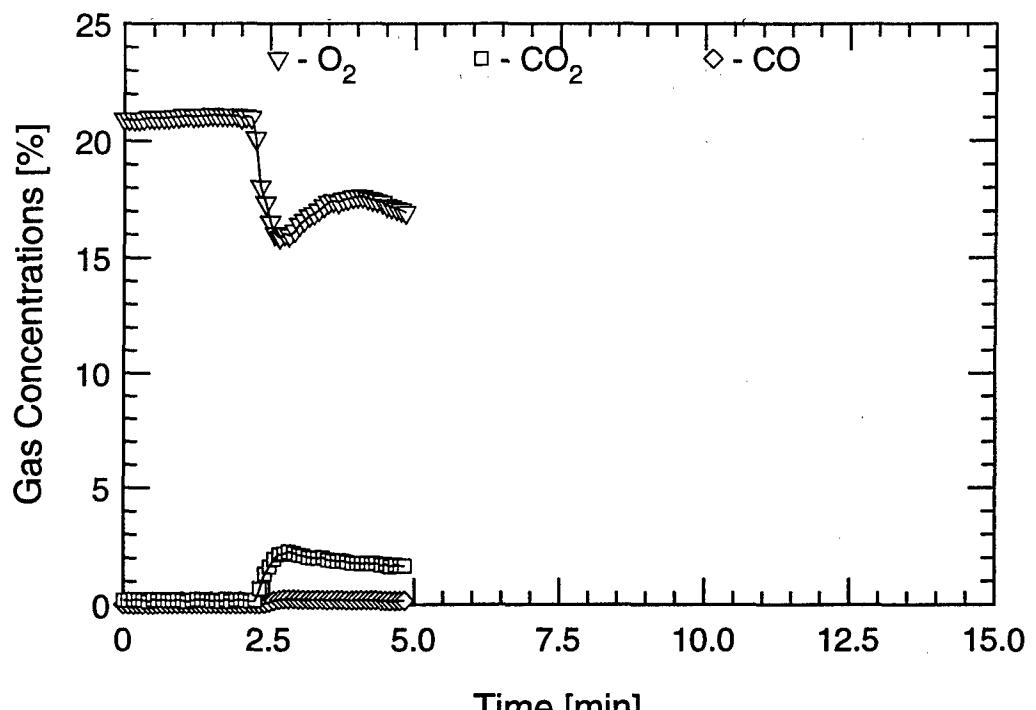


Aft Tree (Low)

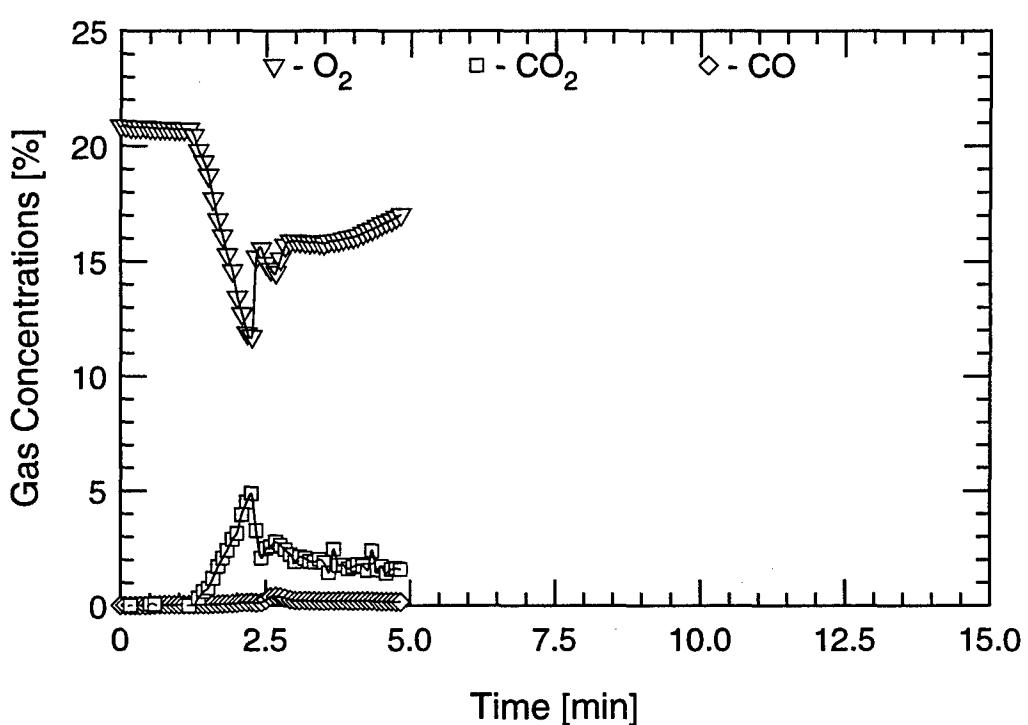


Aft Tree (High)

TEST #4

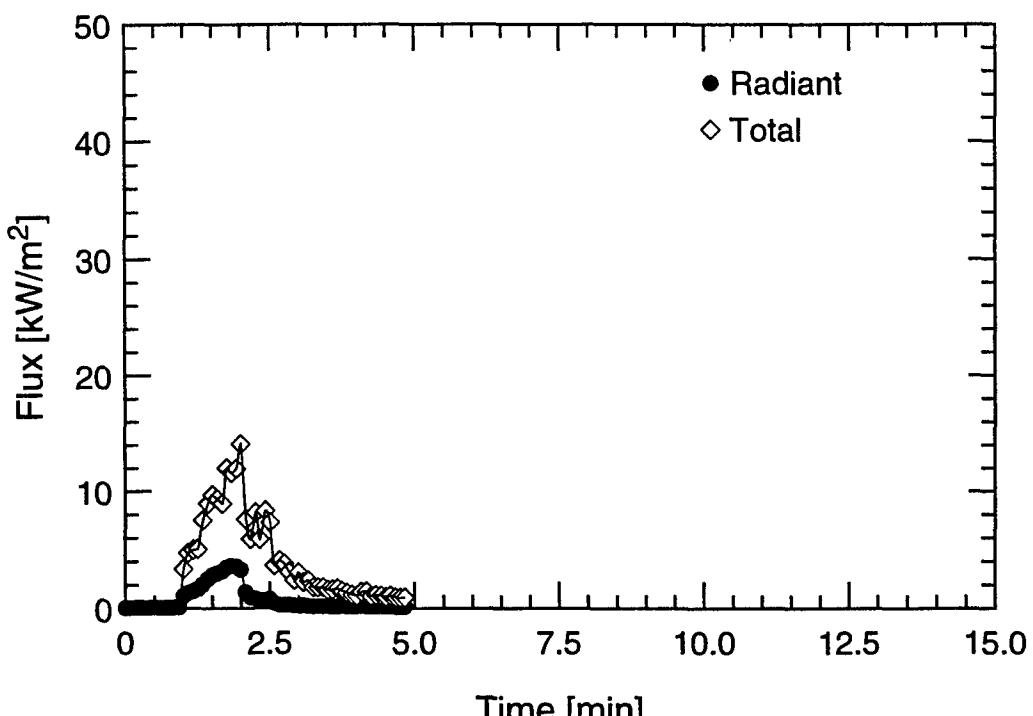


Forward Tree (Low)

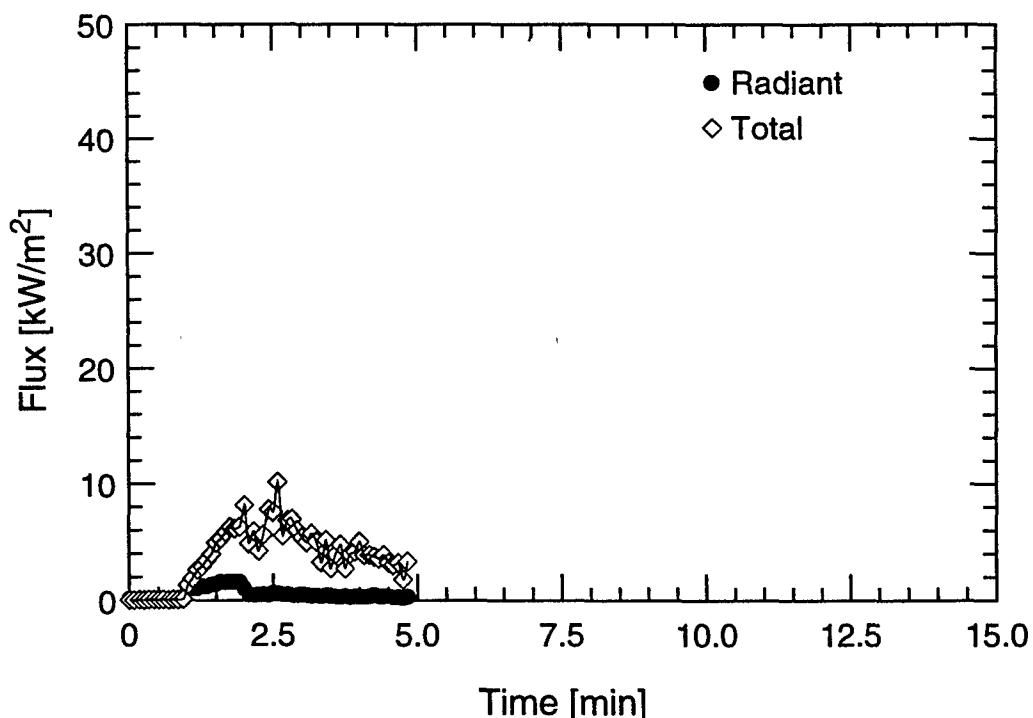


Forward Tree (High)

TEST #4

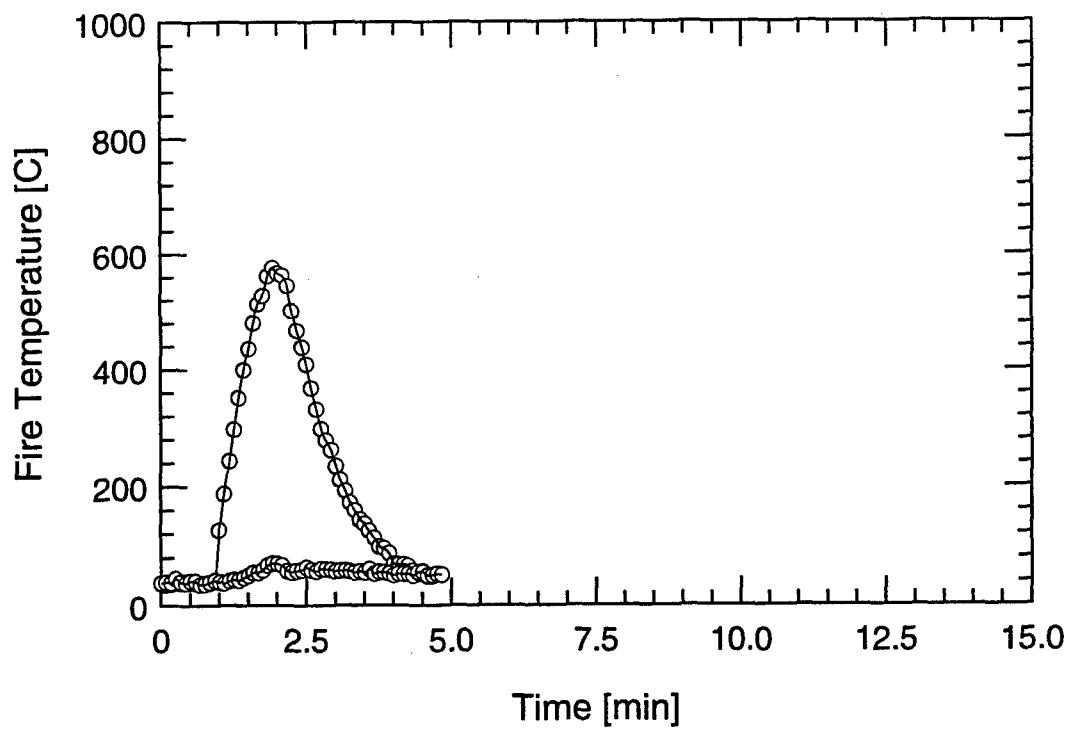


Overhead



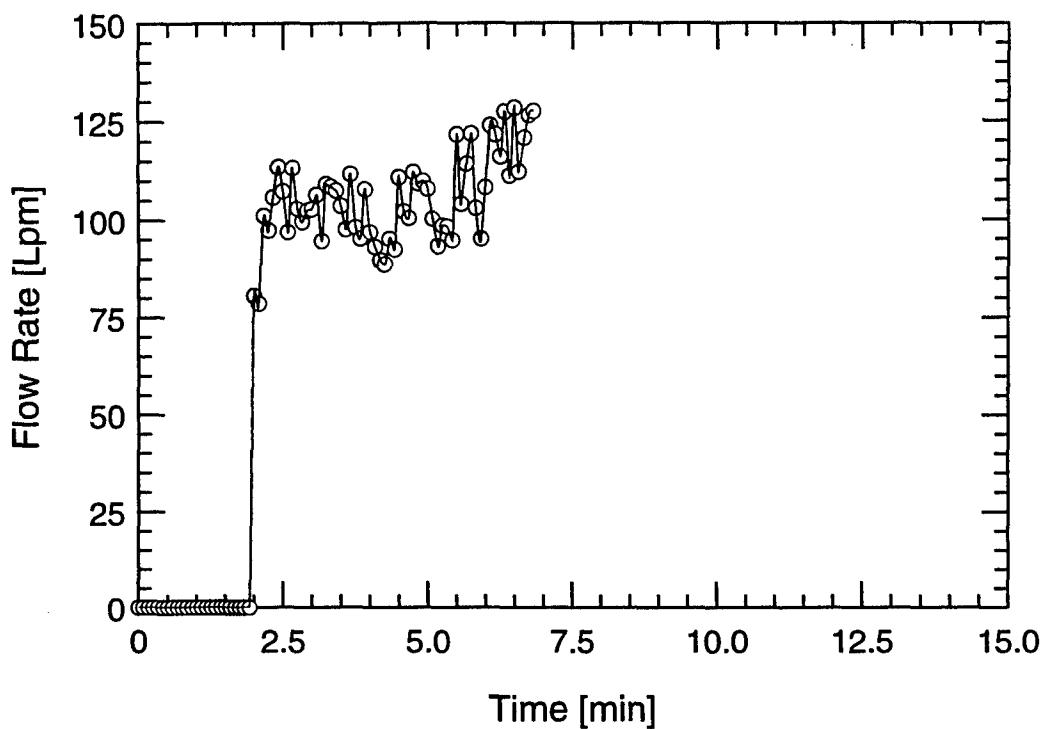
Forward Bulkhead

TEST #4

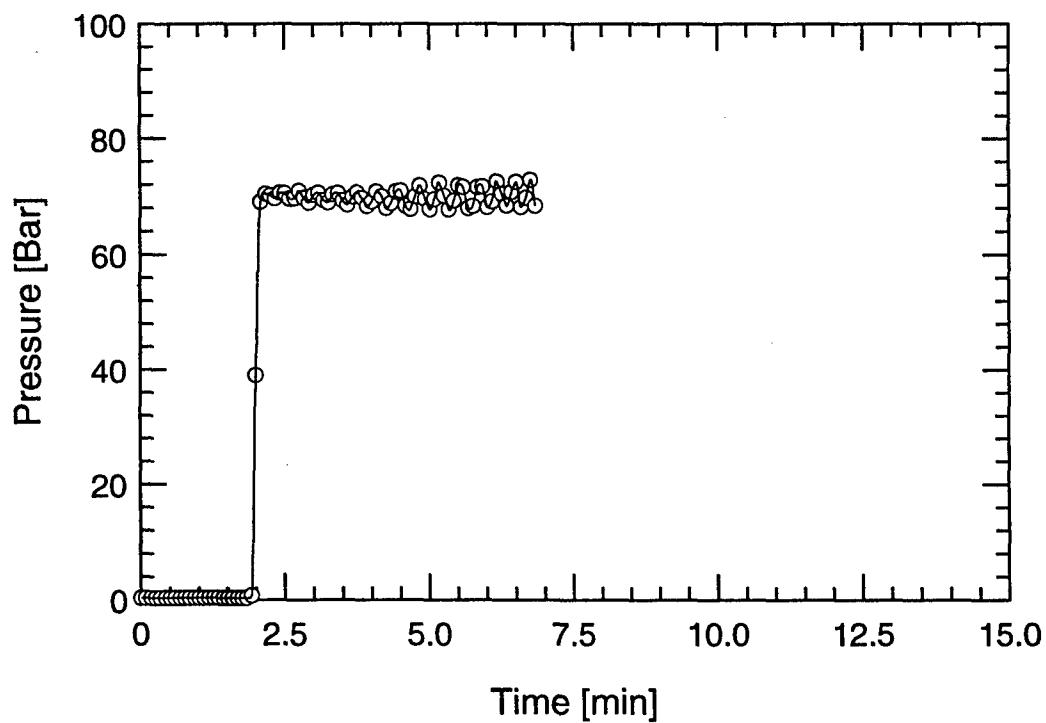


TEST #4

B-26

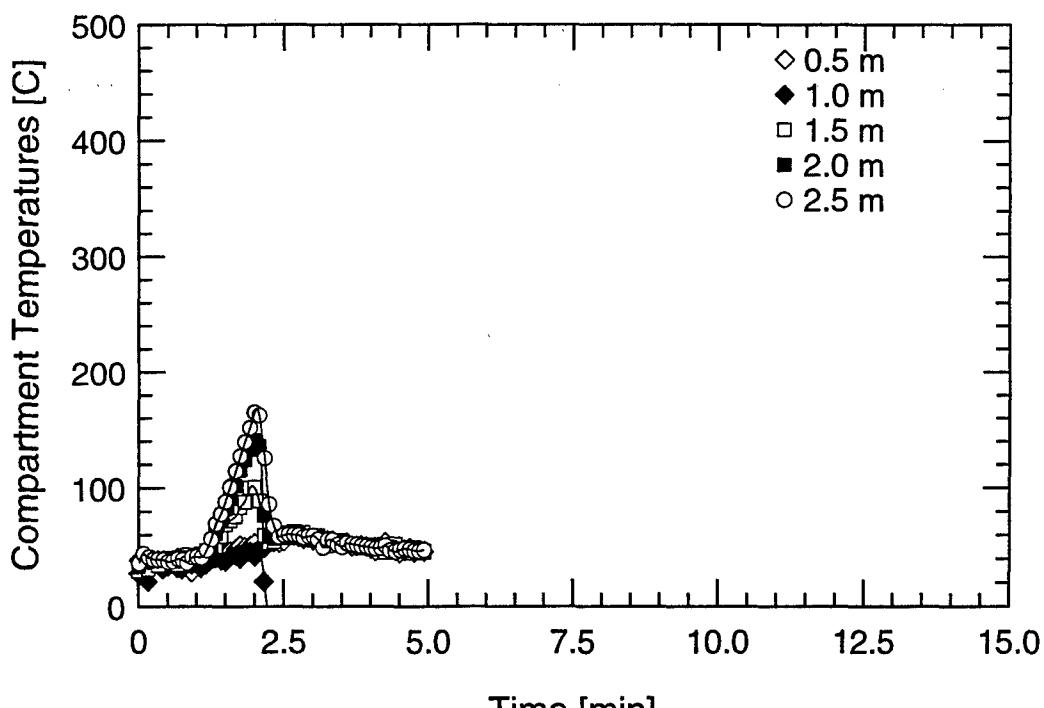


Water Mist System Flow Rate

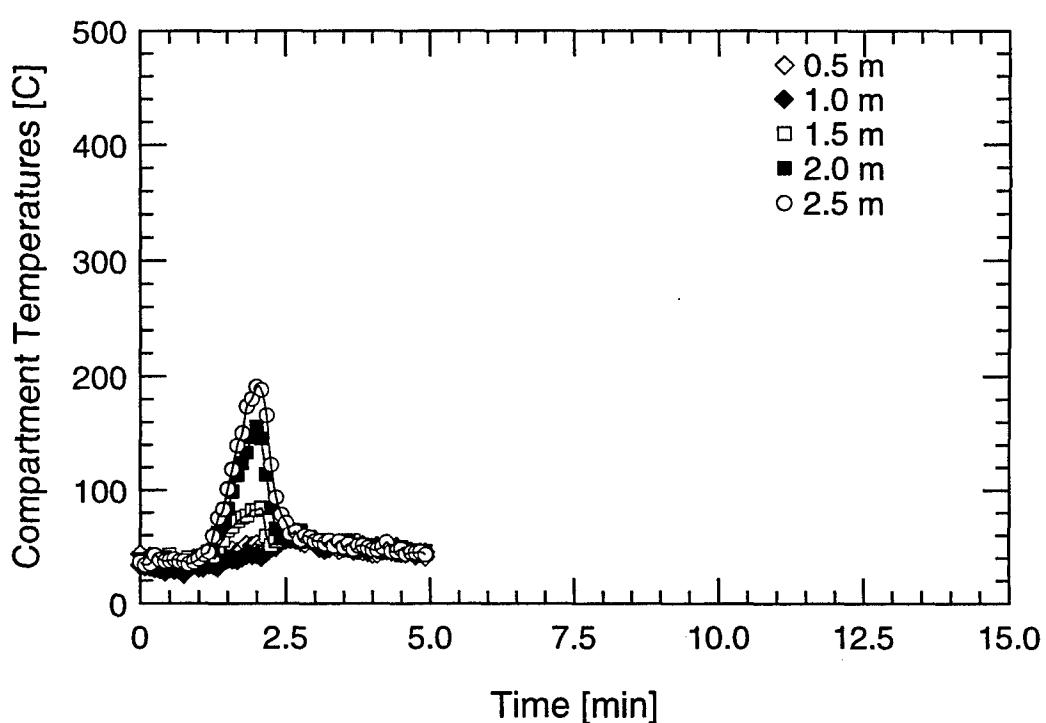


Water Mist System Pressure

TEST #4

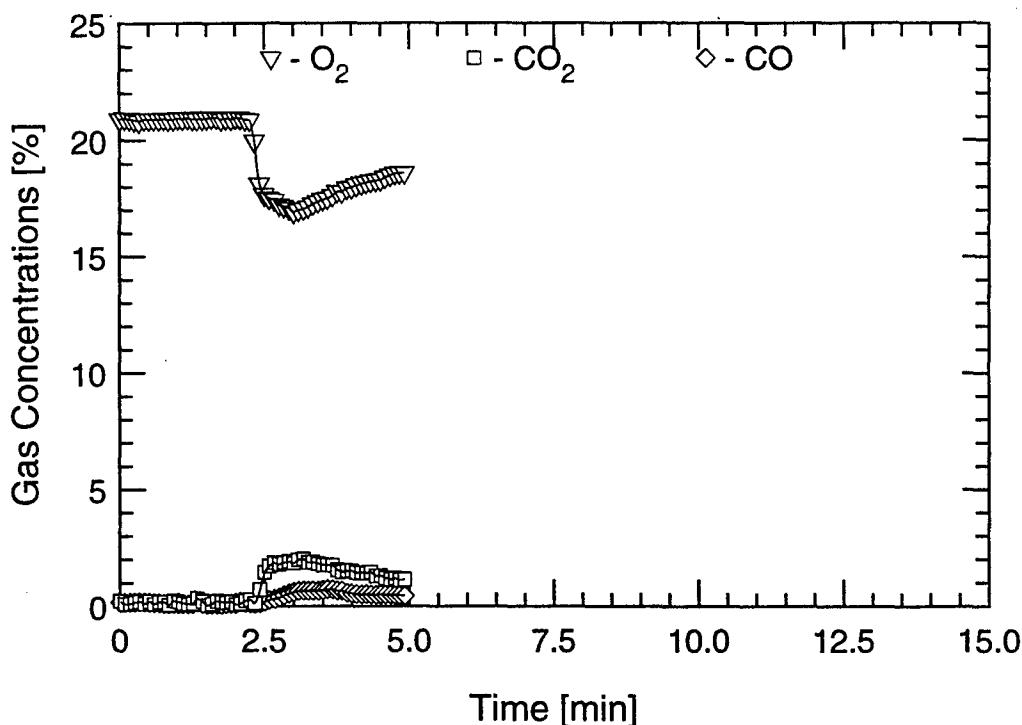


Aft Tree

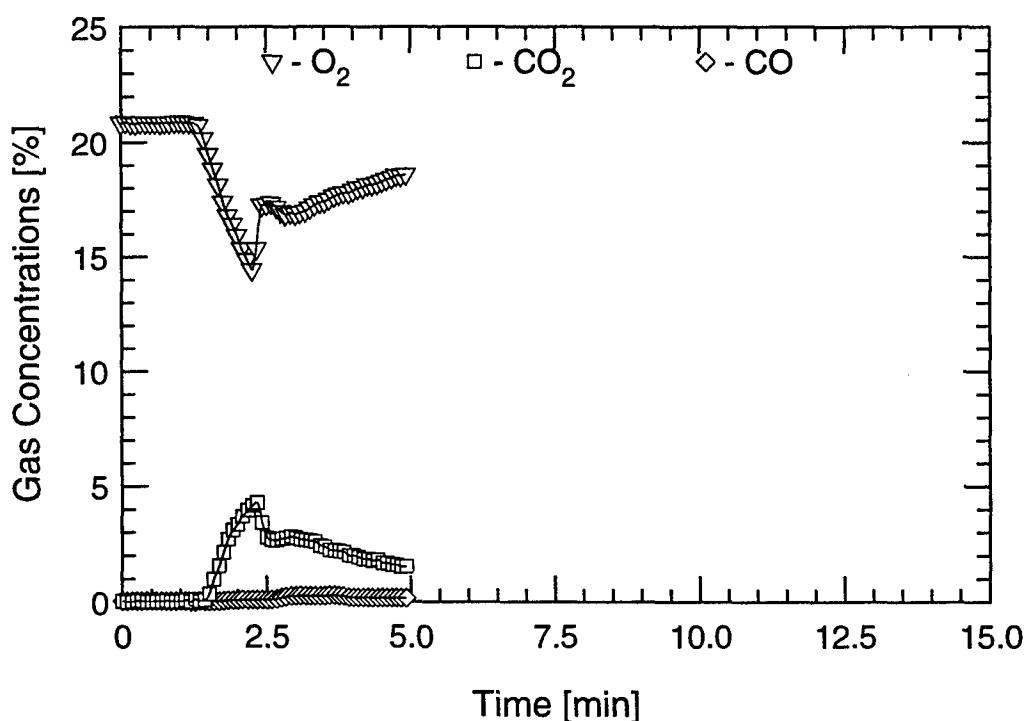


Forward Tree

TEST #5

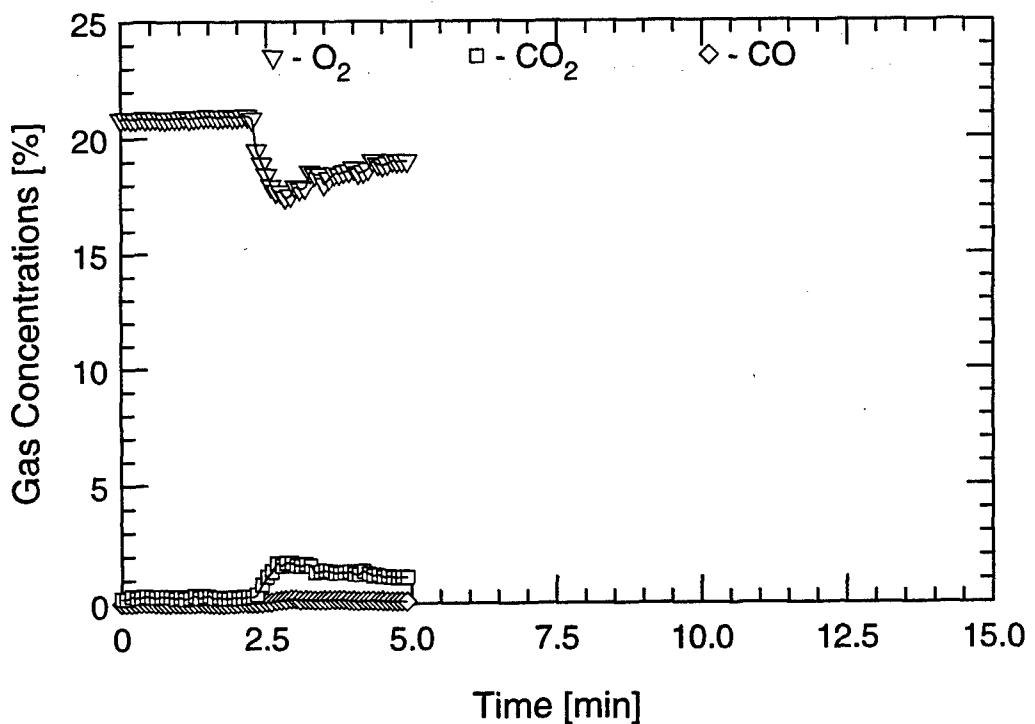


Aft Tree (Low)

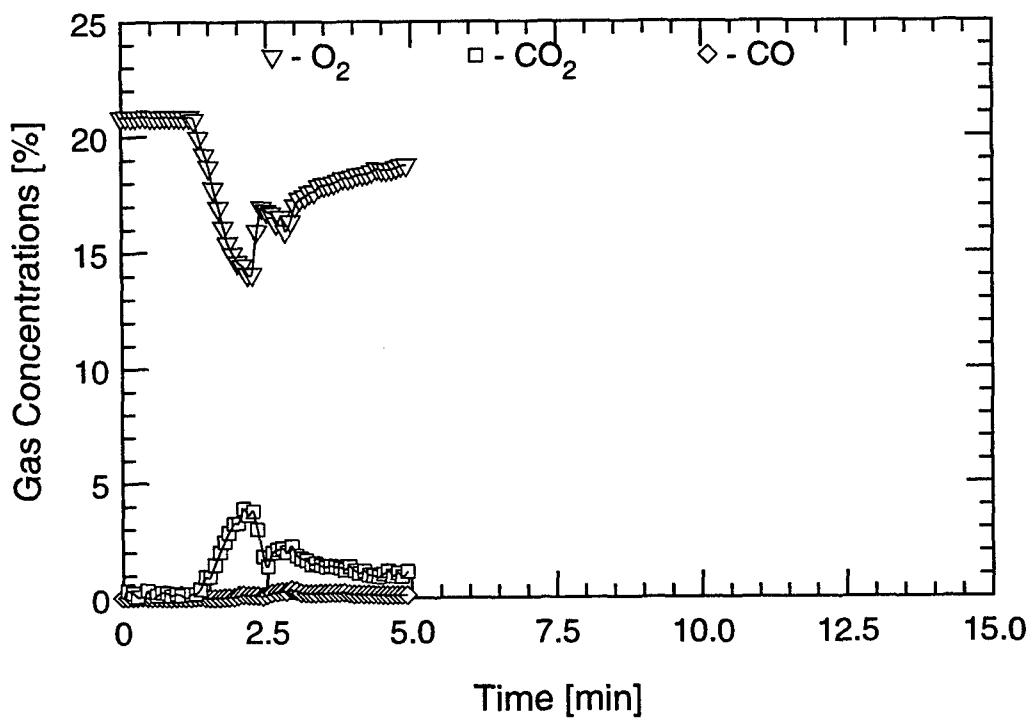


Aft Tree (High)

TEST #5

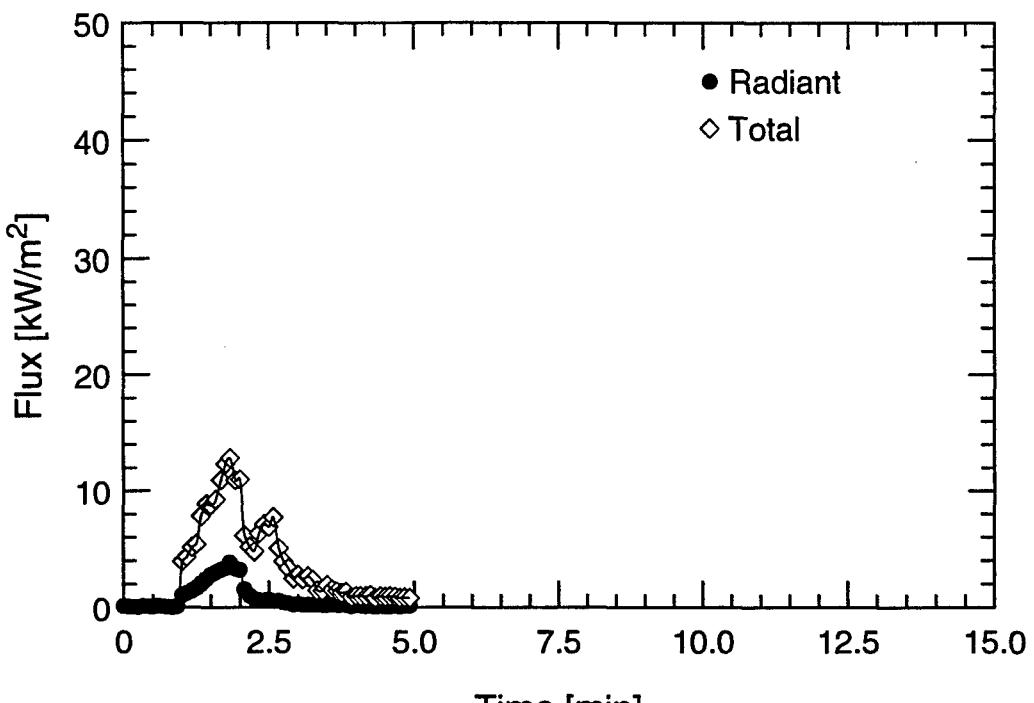


Forward Tree (Low)

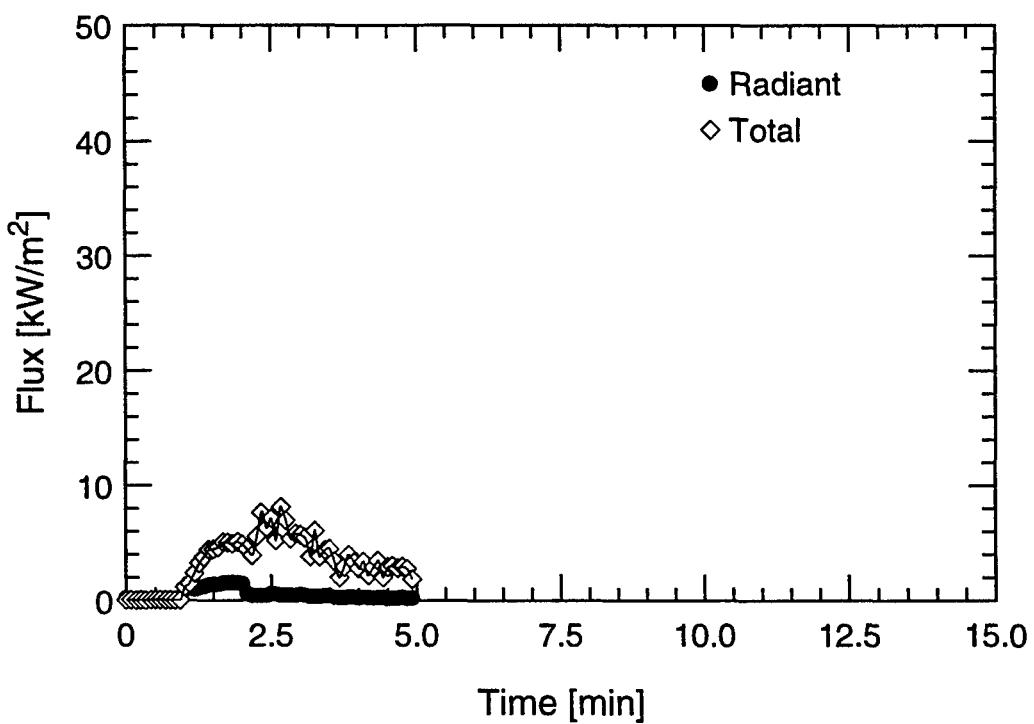


Forward Tree (High)

TEST #5

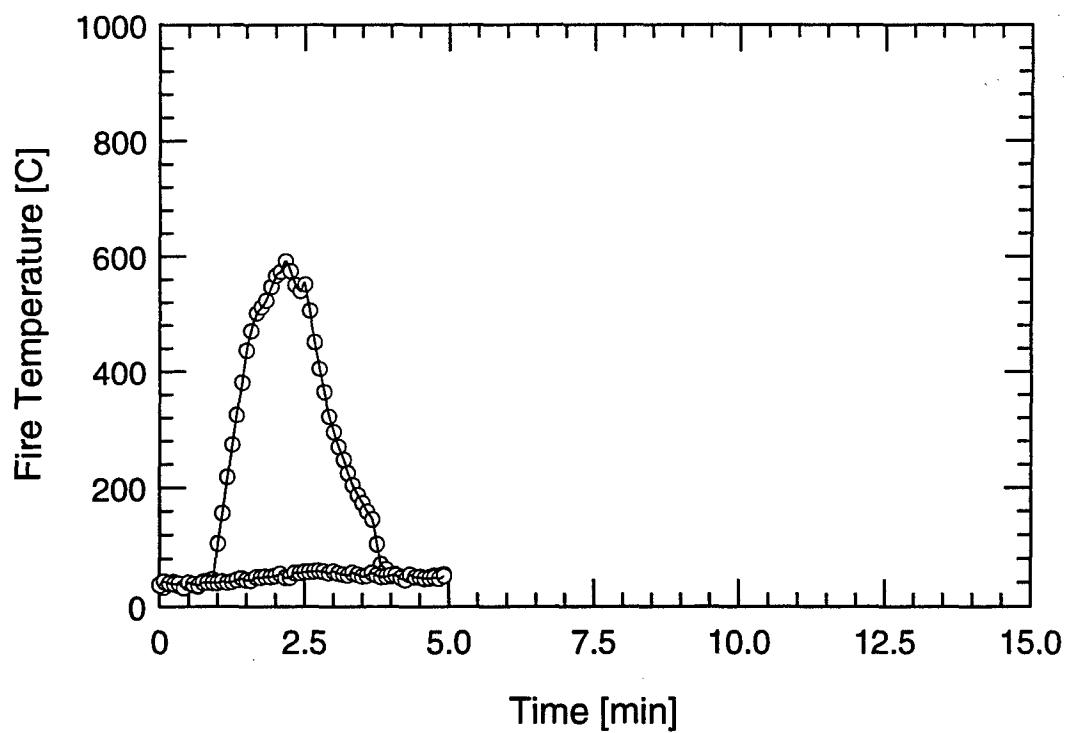


Overhead



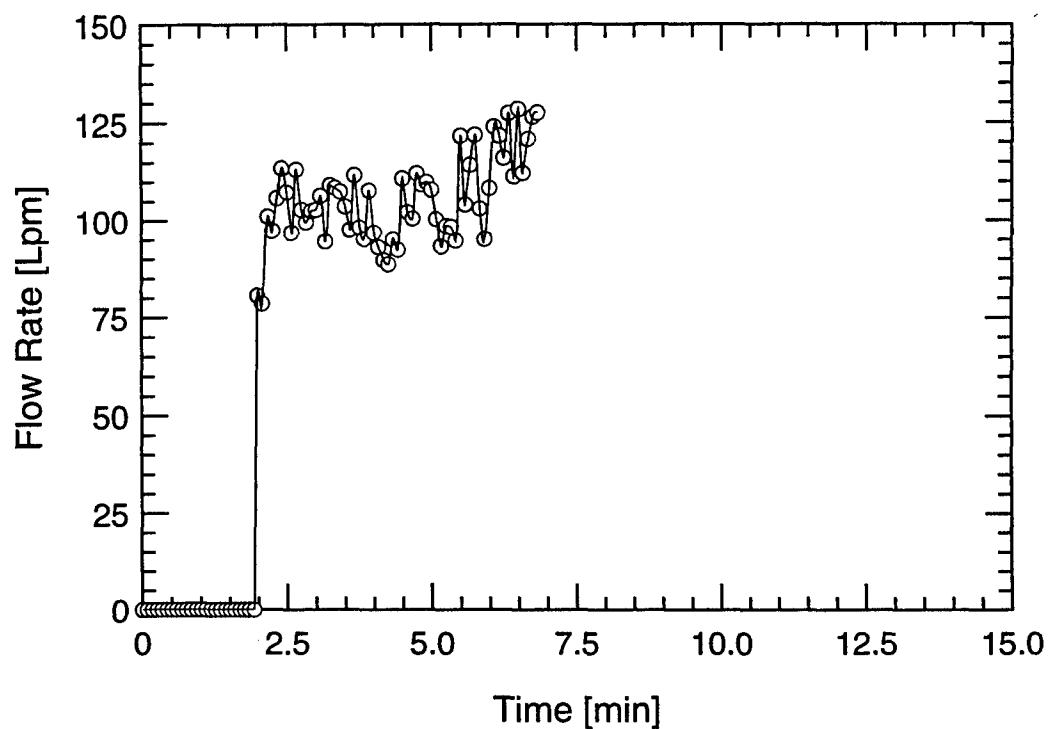
Forward Bulkhead

TEST #5

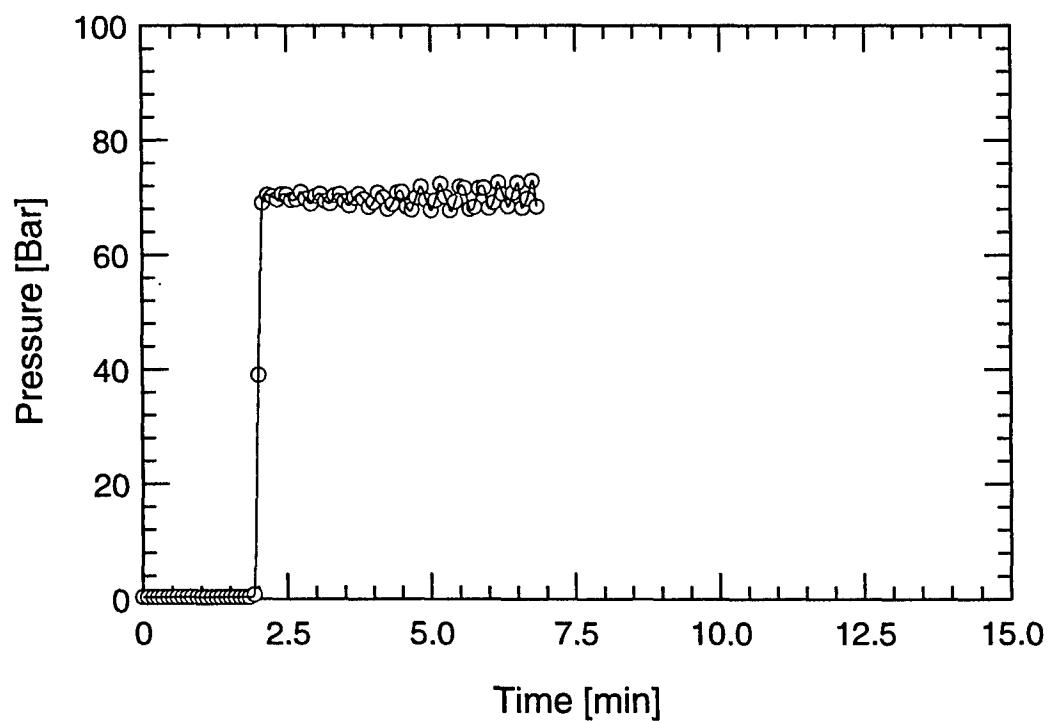


TEST #5

B-32

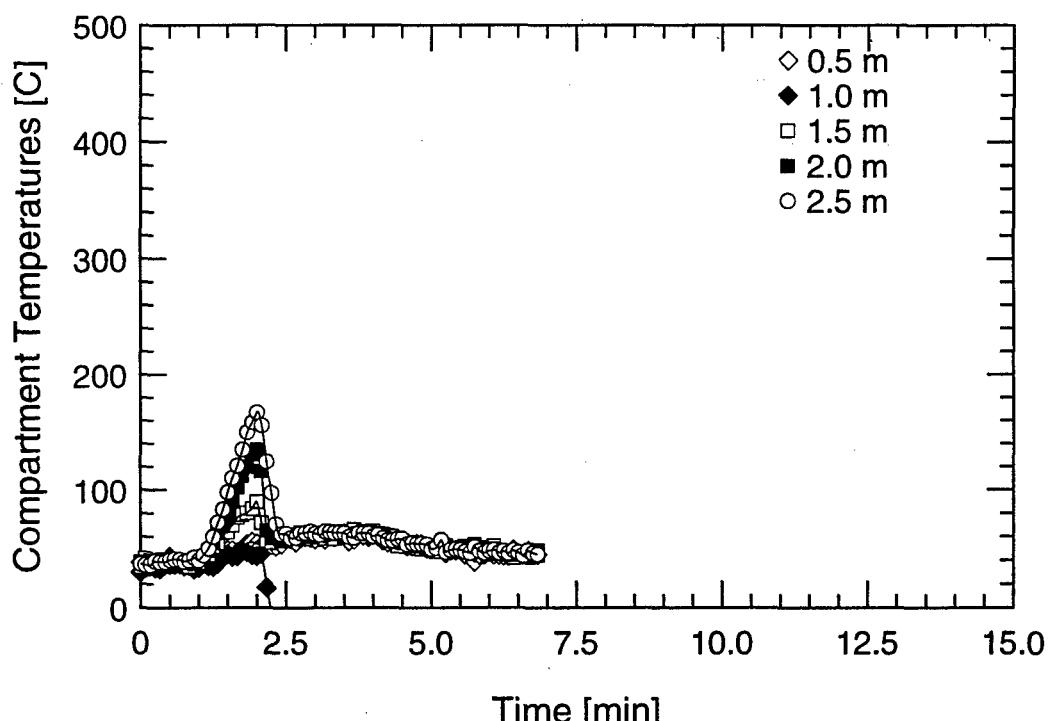


Water Mist System Flow Rate

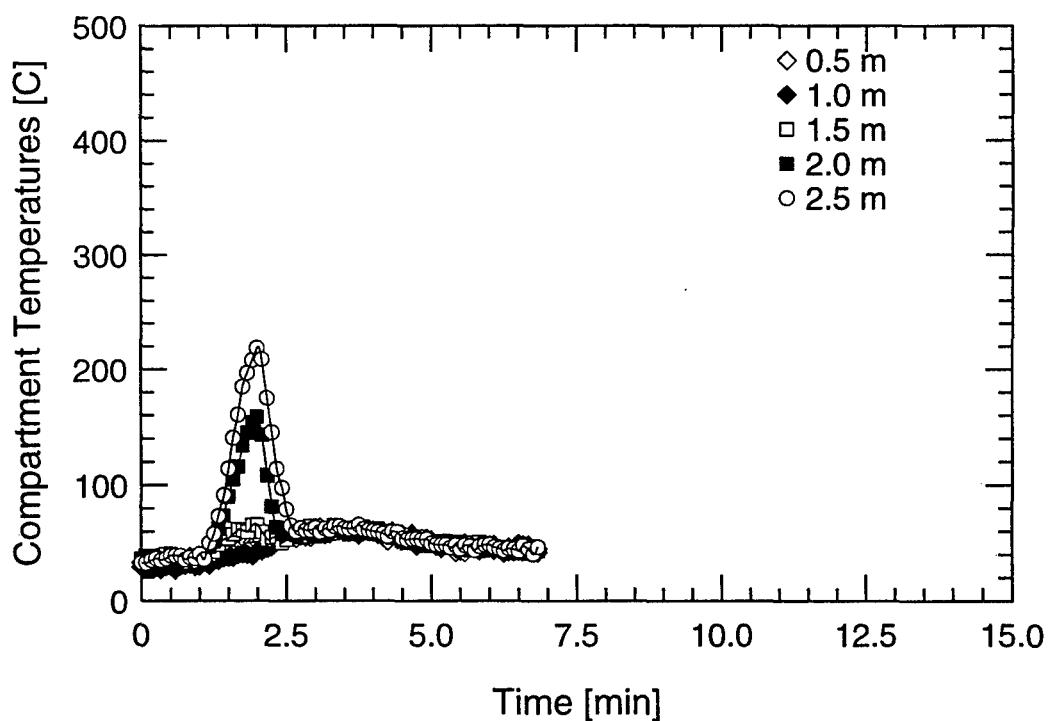


Water Mist System Pressure

TEST #5

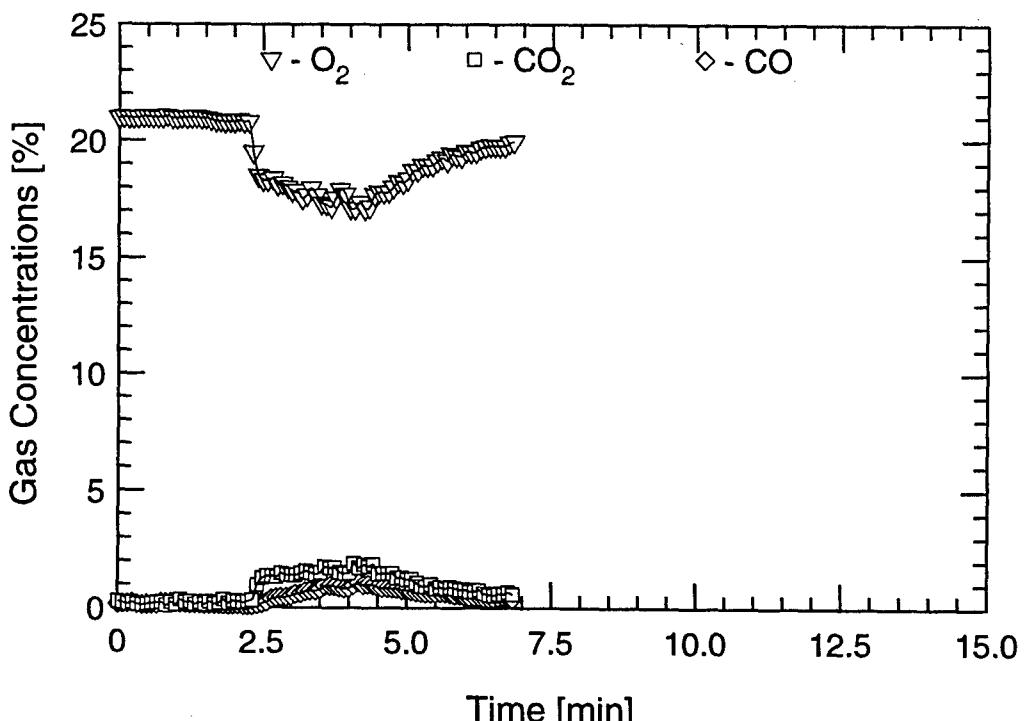


Aft Tree

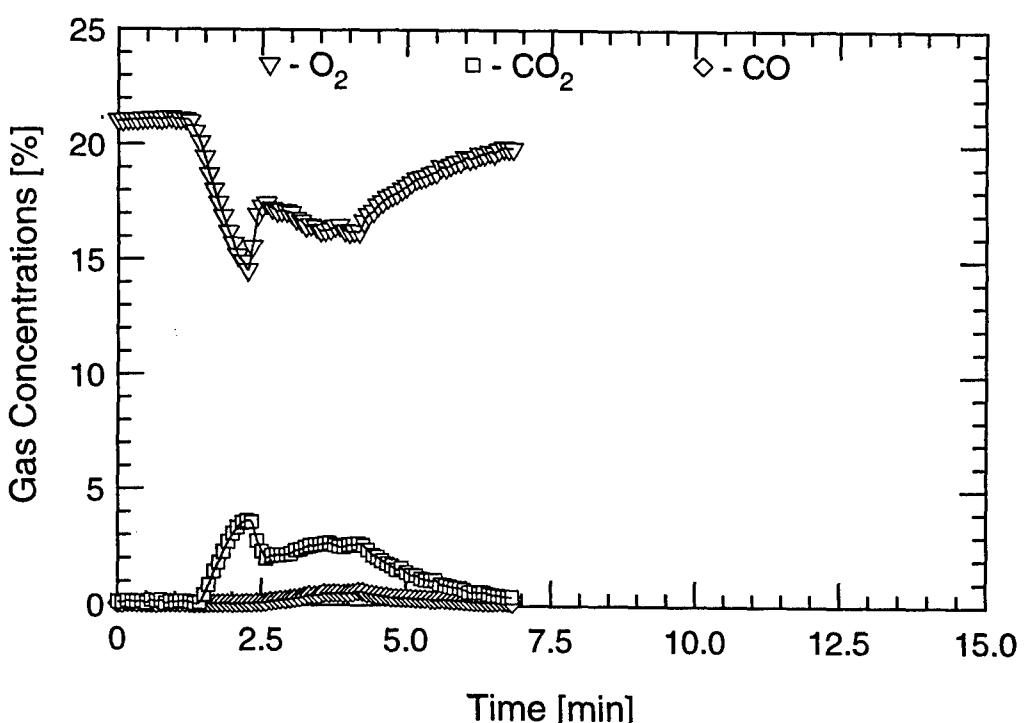


Forward Tree

TEST #6

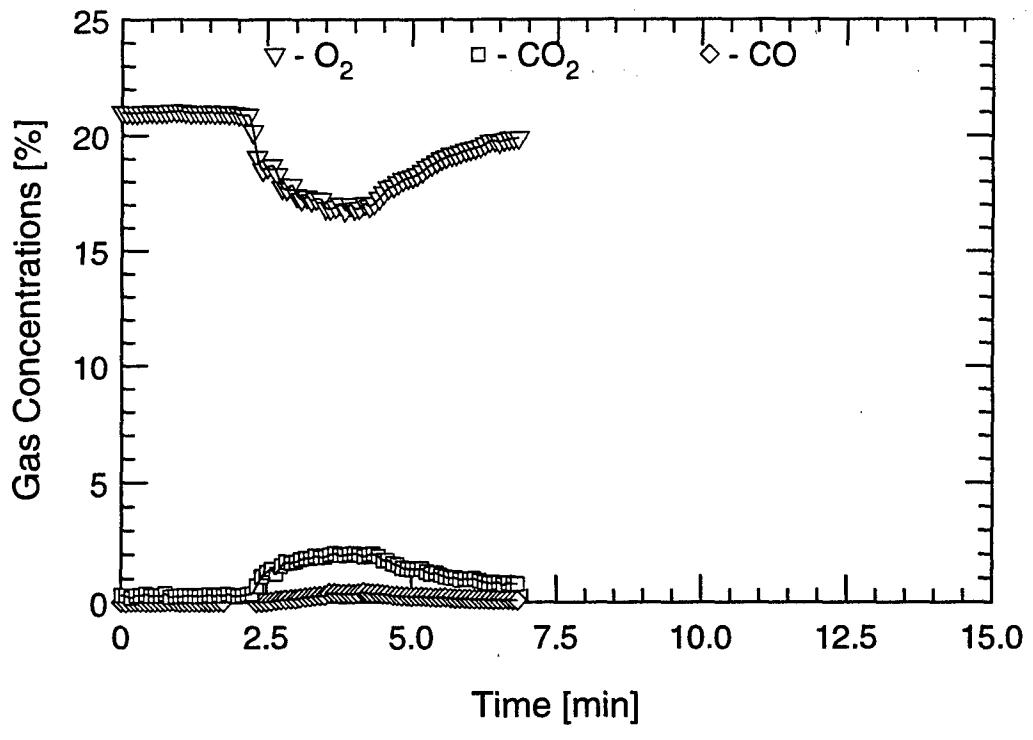


Aft Tree (Low)

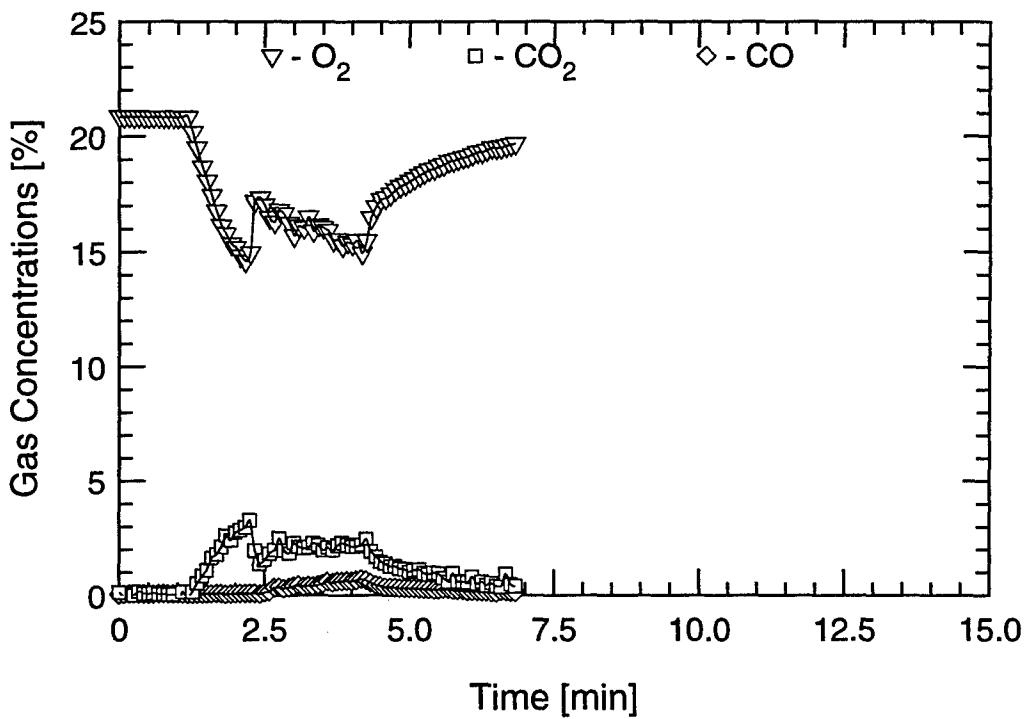


Aft Tree (High)

TEST #6

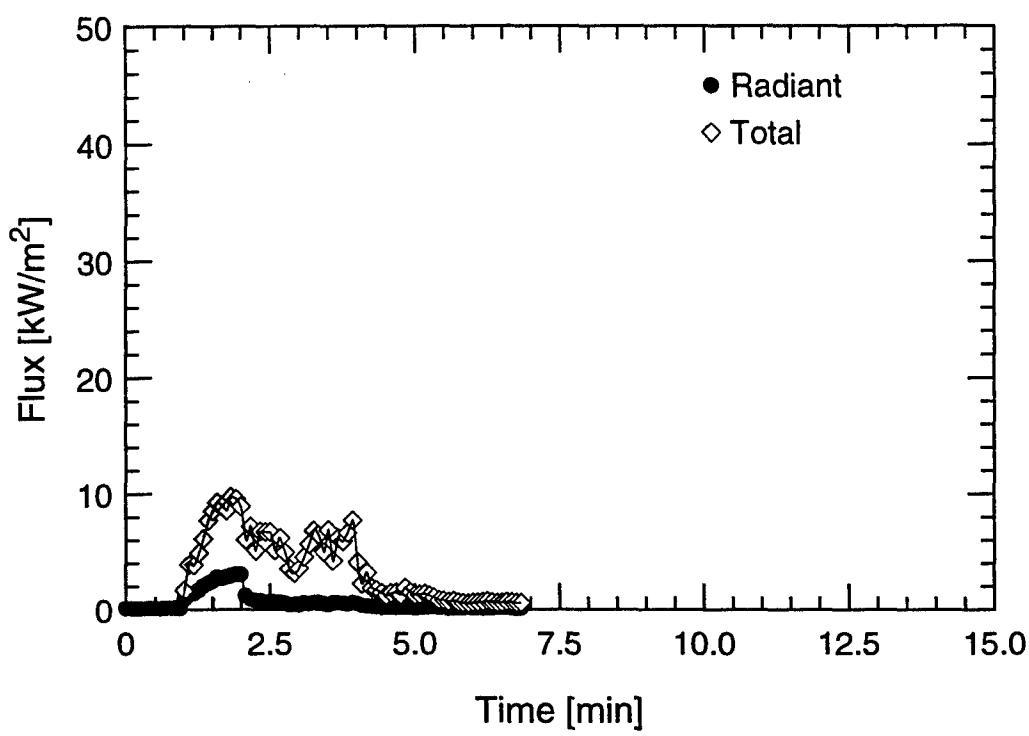


Forward Tree (Low)

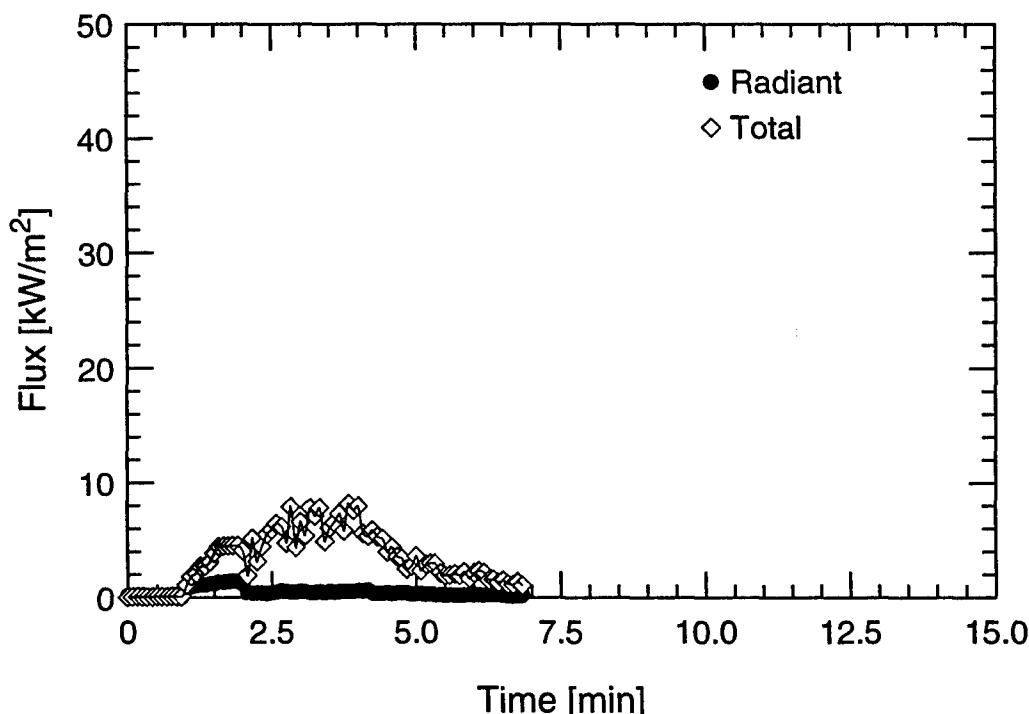


Forward Tree (High)

TEST #6

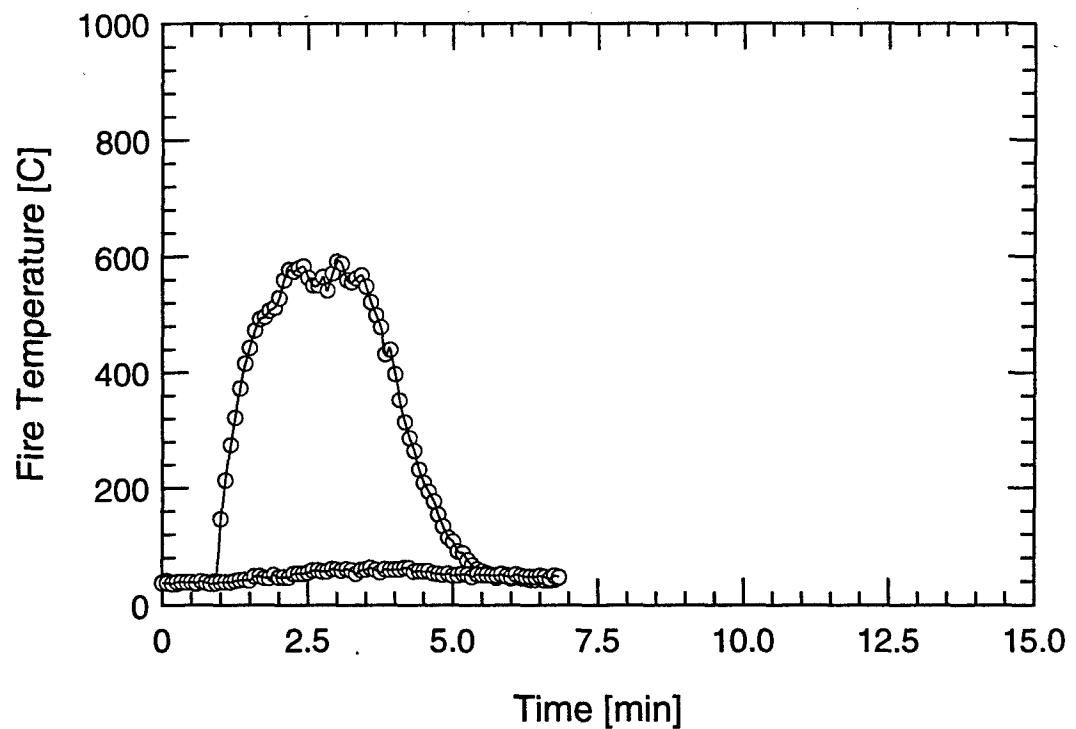


Overhead



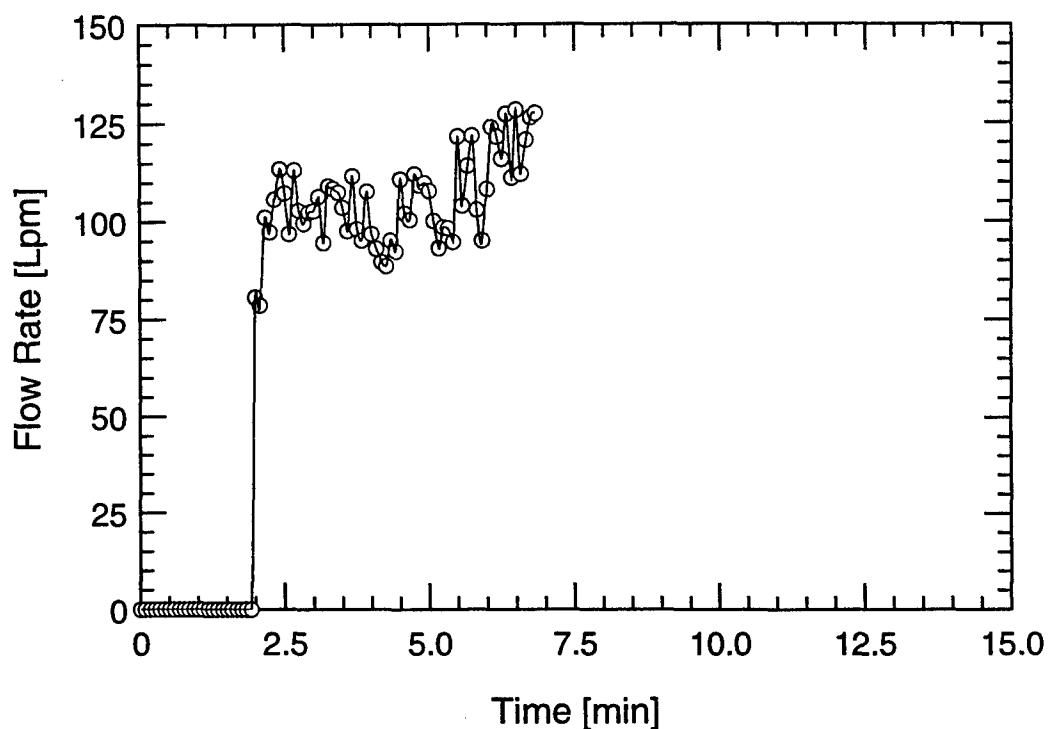
Forward Bulkhead

TEST #6

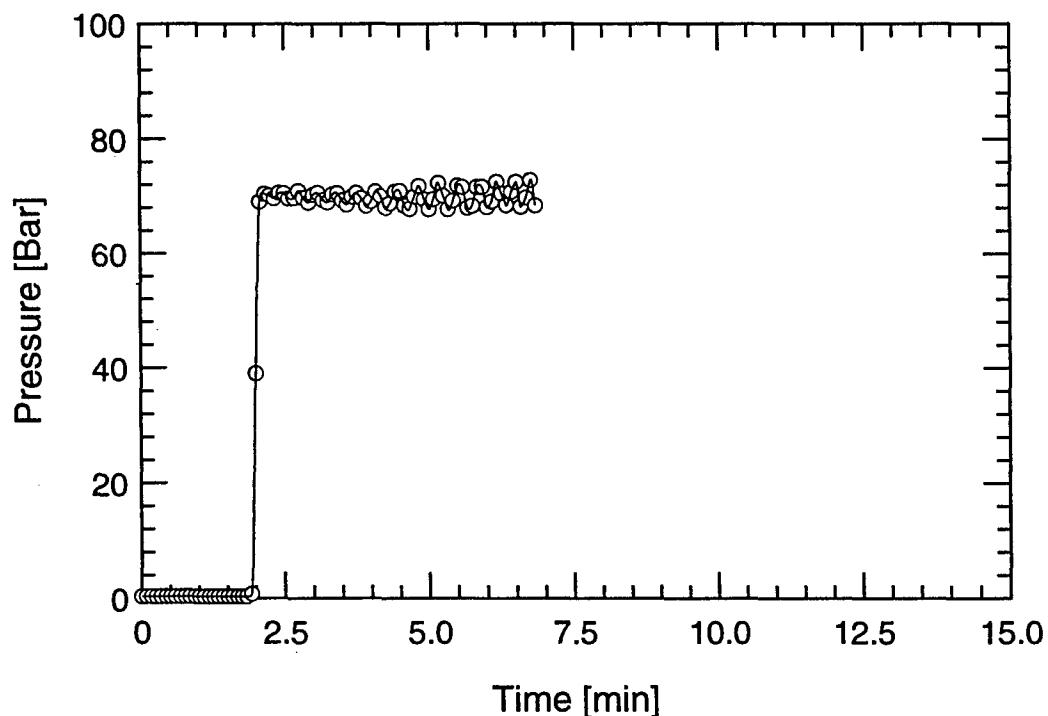


TEST #6

B-38

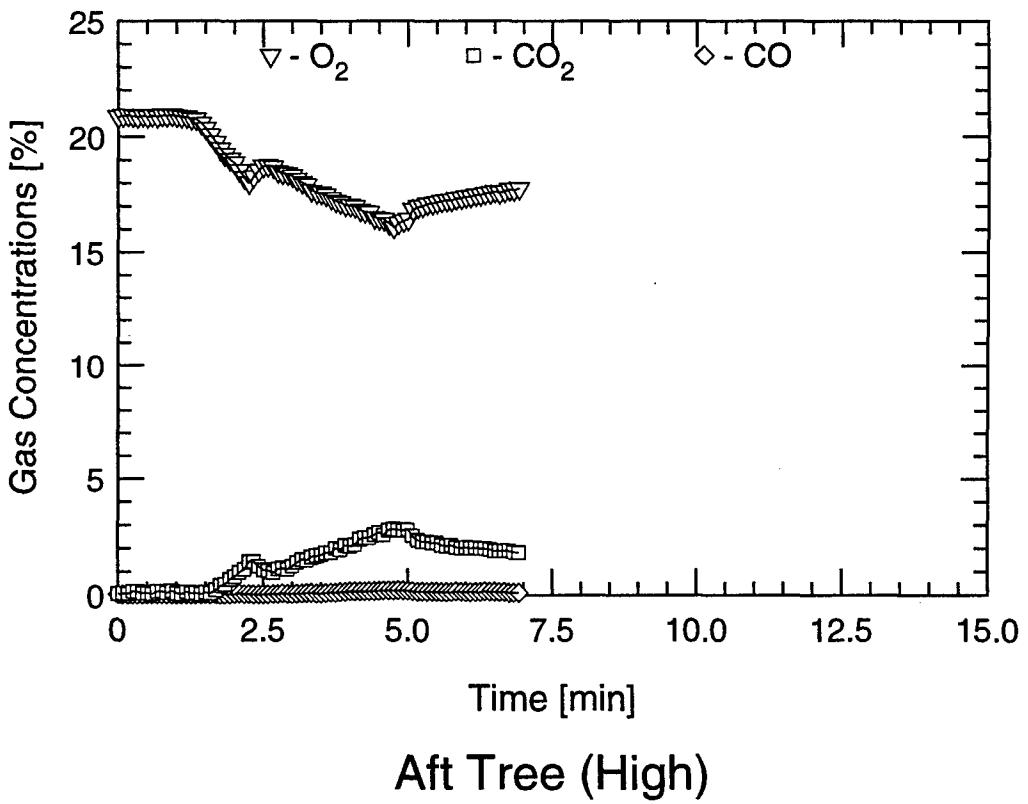
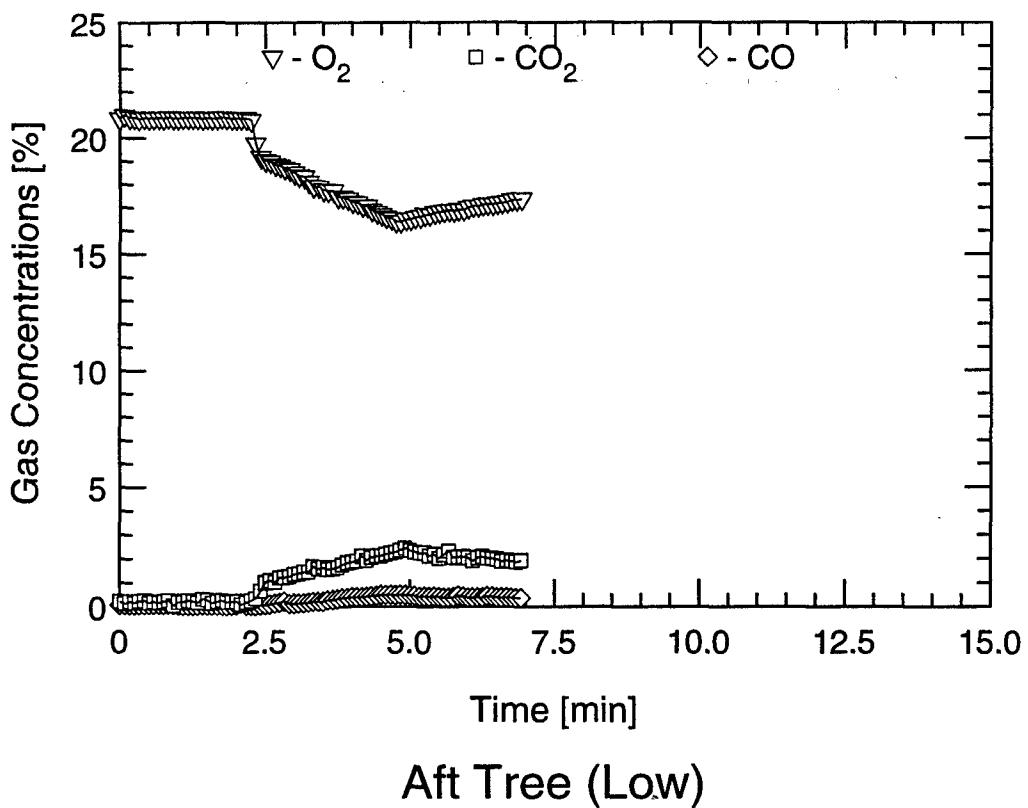


Water Mist System Flow Rate



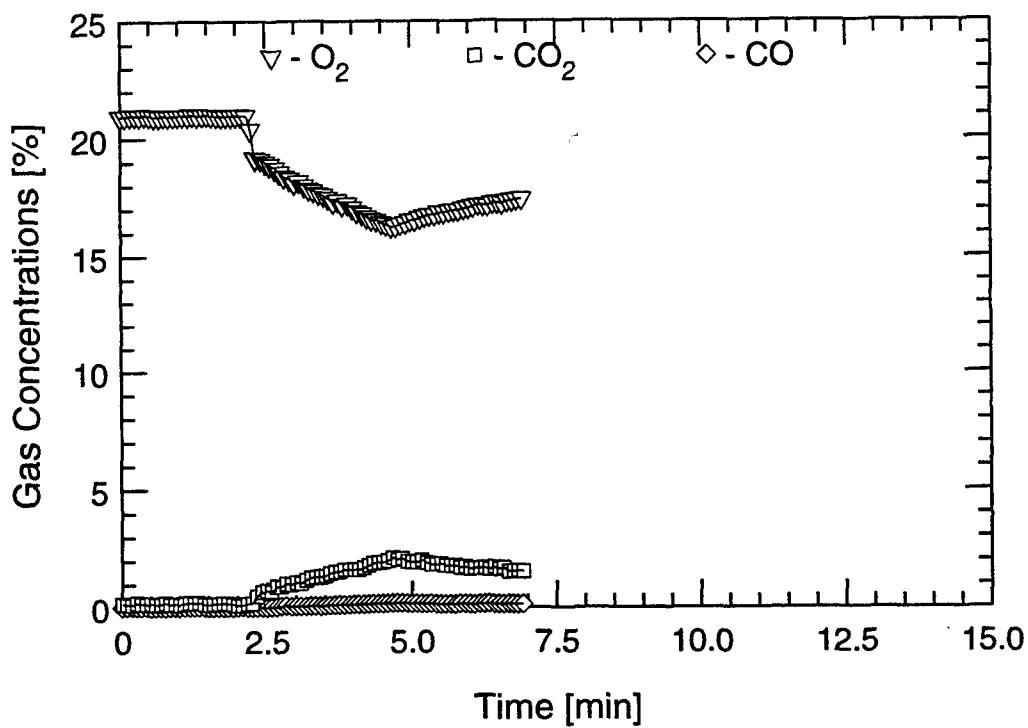
Water Mist System Pressure

TEST #6

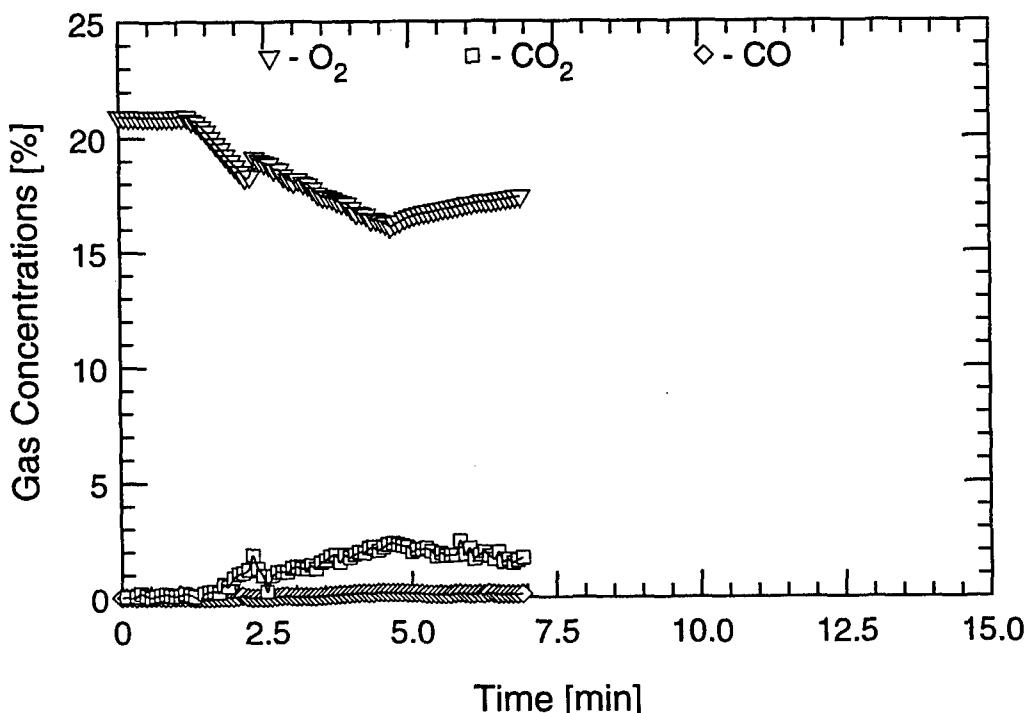


TEST #7

B-40

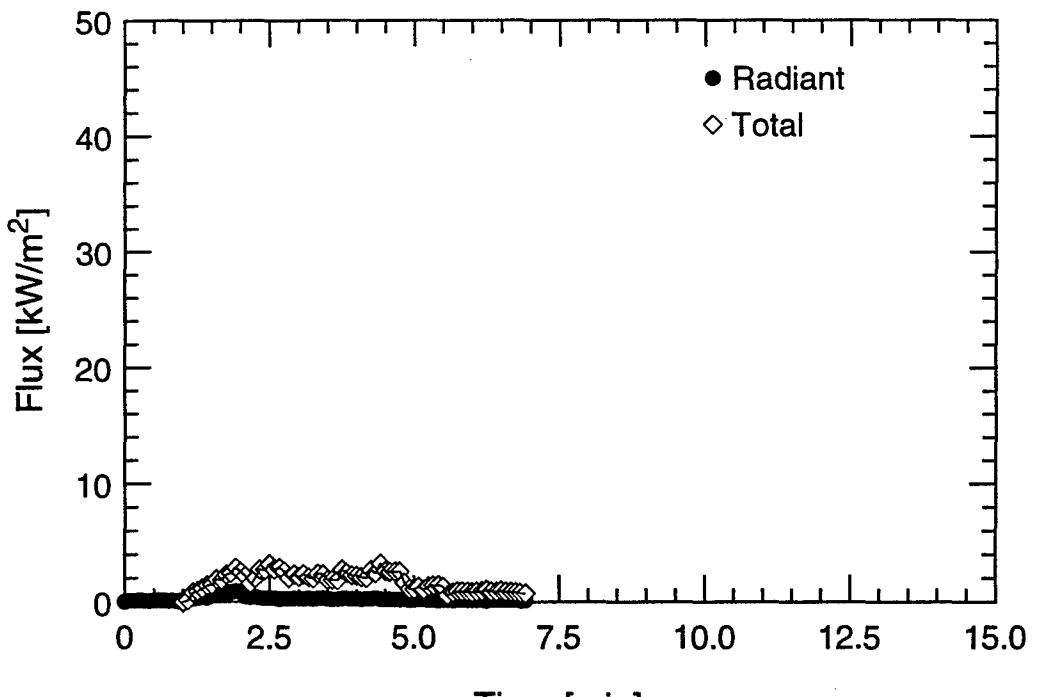


Forward Tree (Low)

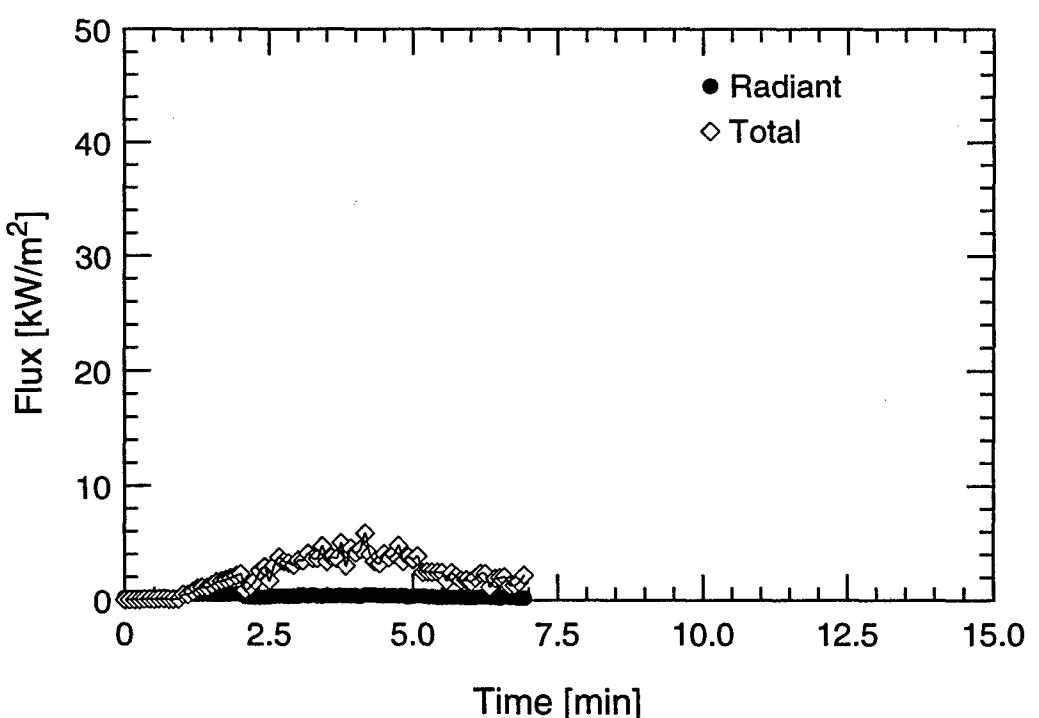


Forward Tree (High)

TEST #7

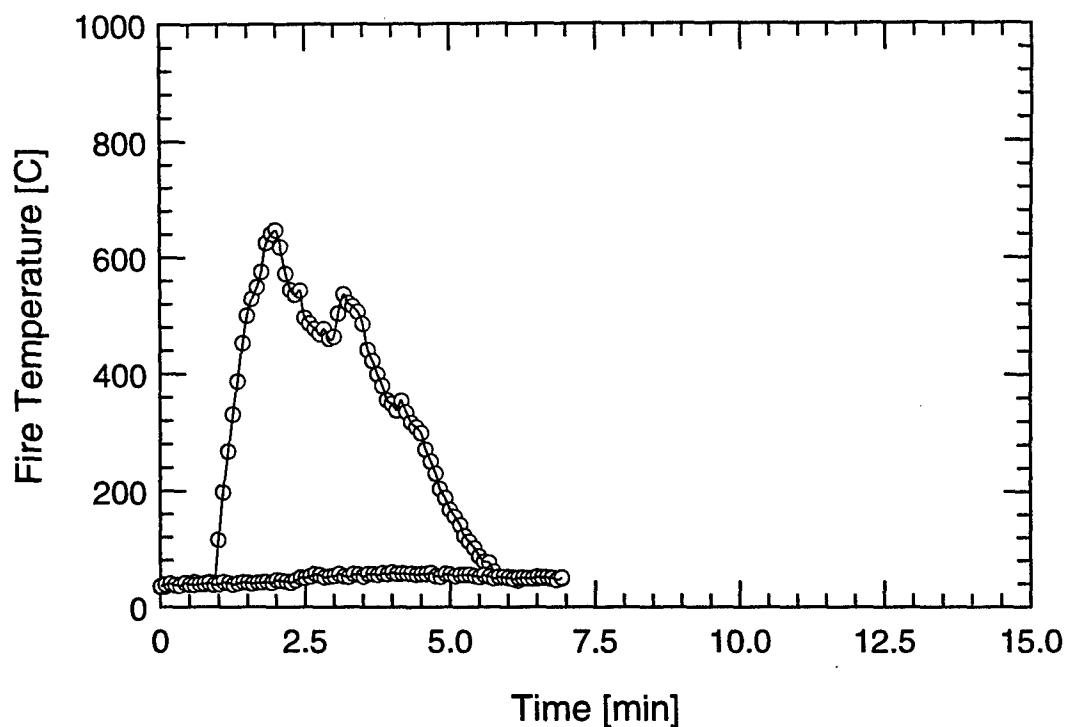


Overhead

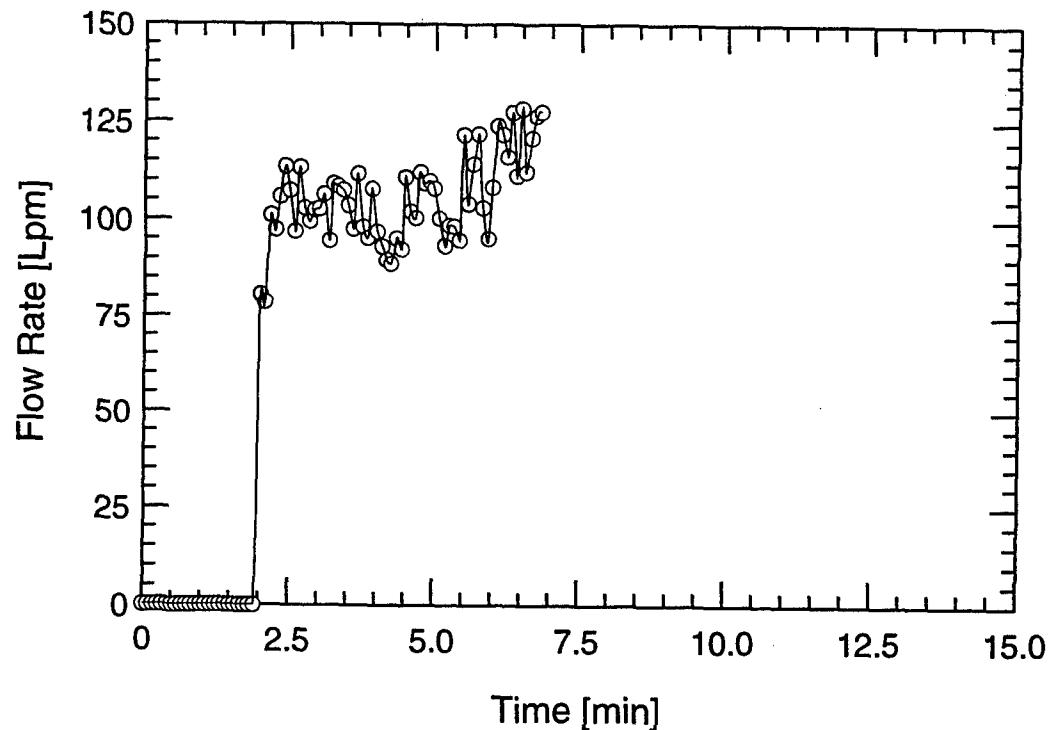


Forward Bulkhead

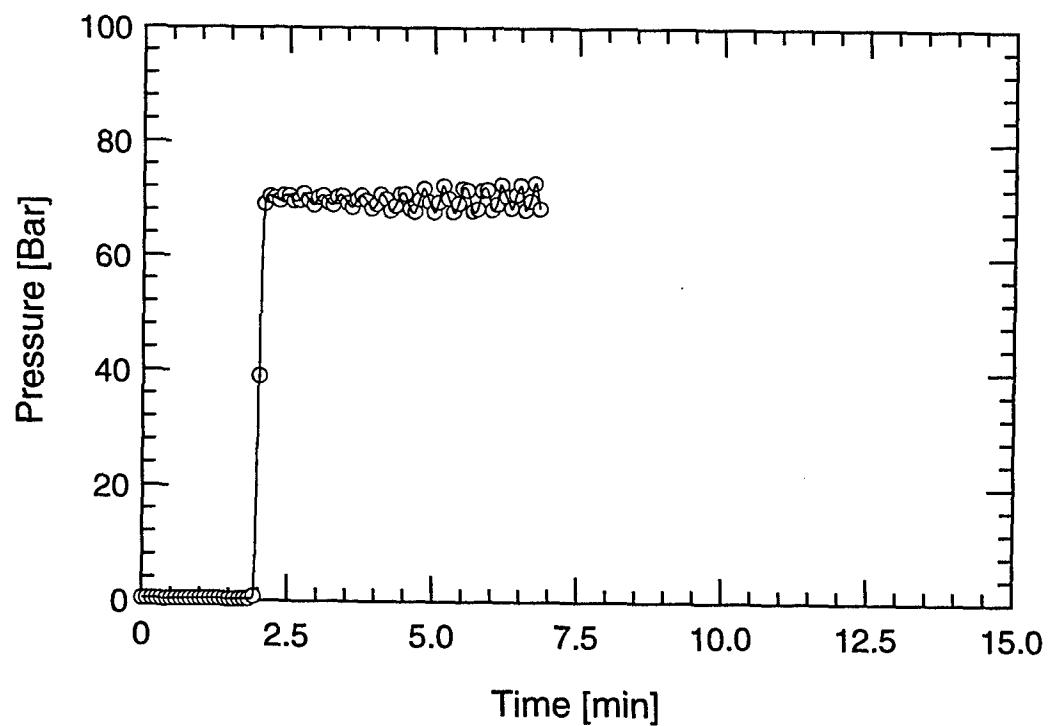
TEST #7



TEST #7

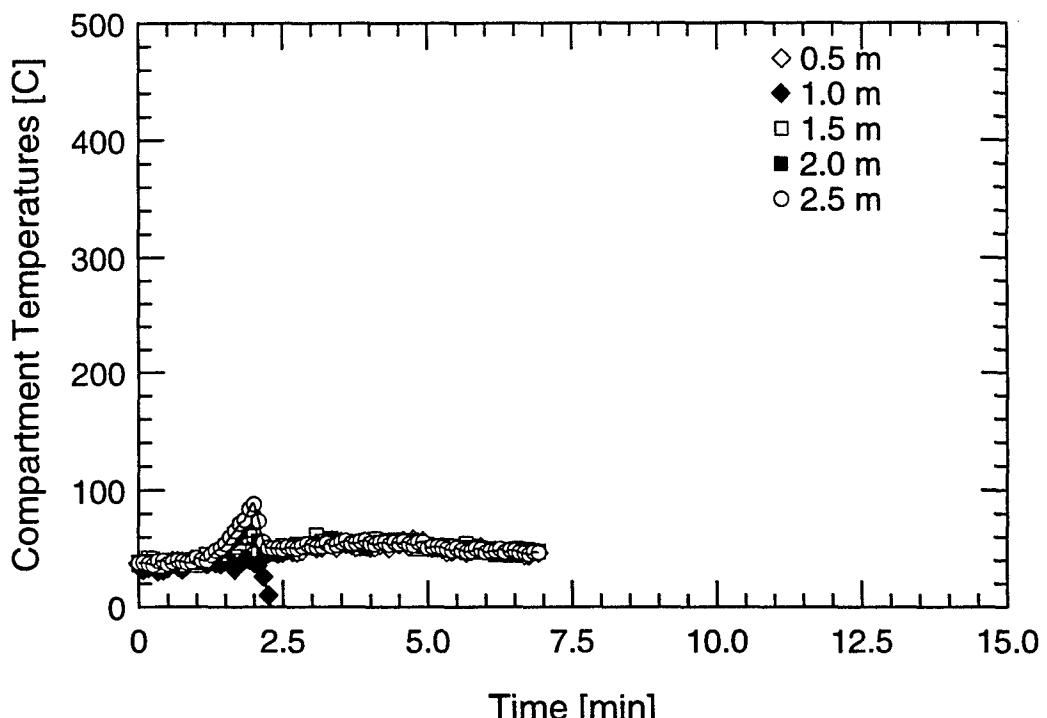


Water Mist System Flow Rate

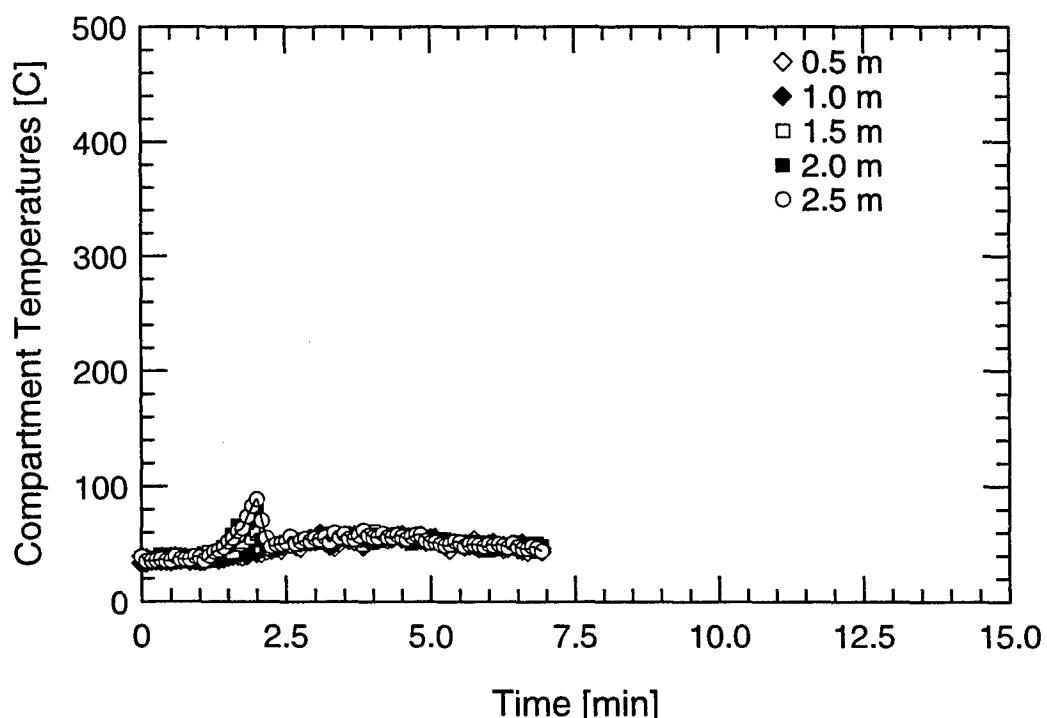


Water Mist System Pressure

TEST #7

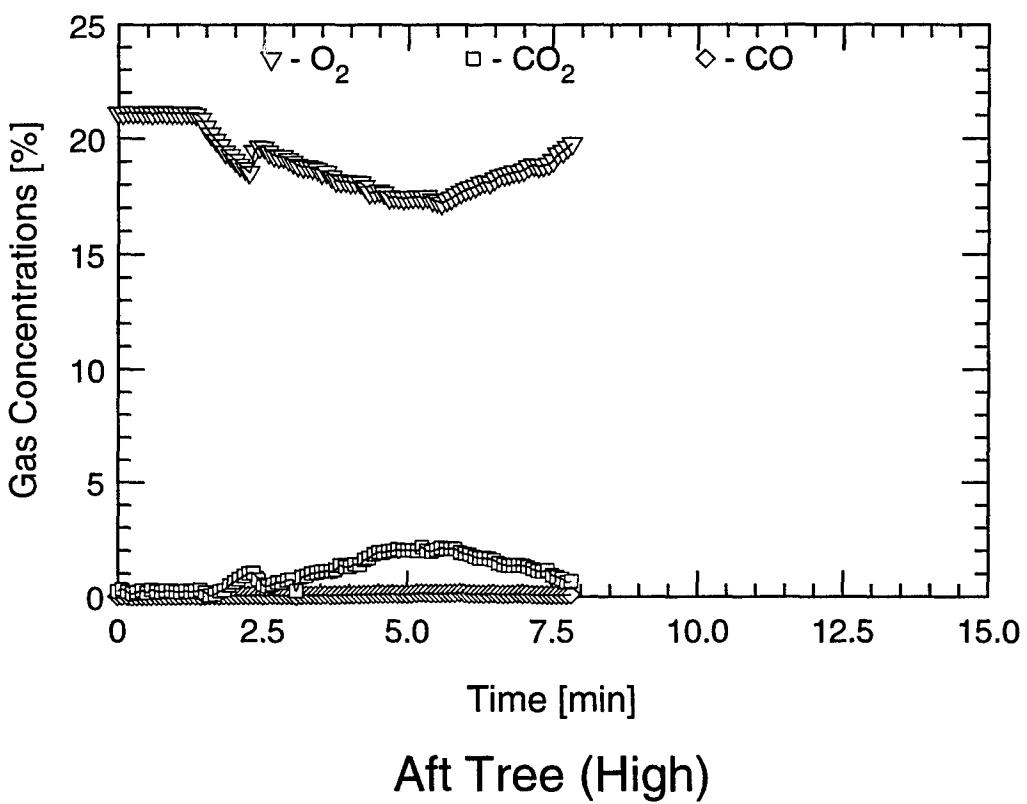
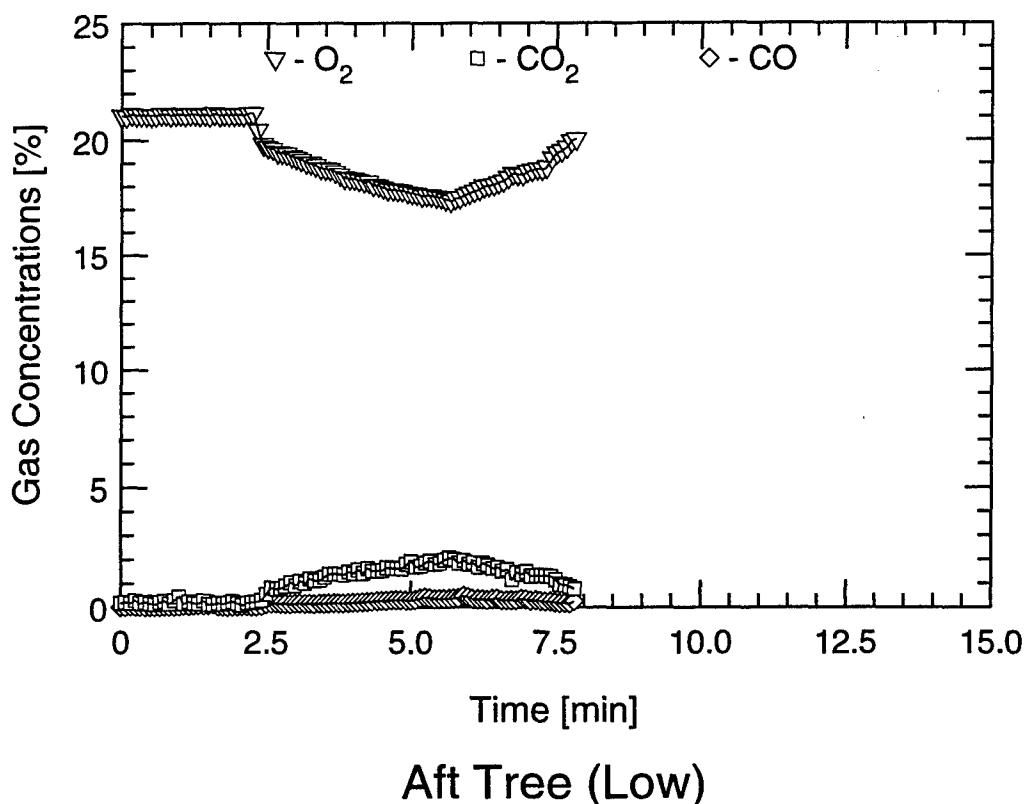


Aft Tree

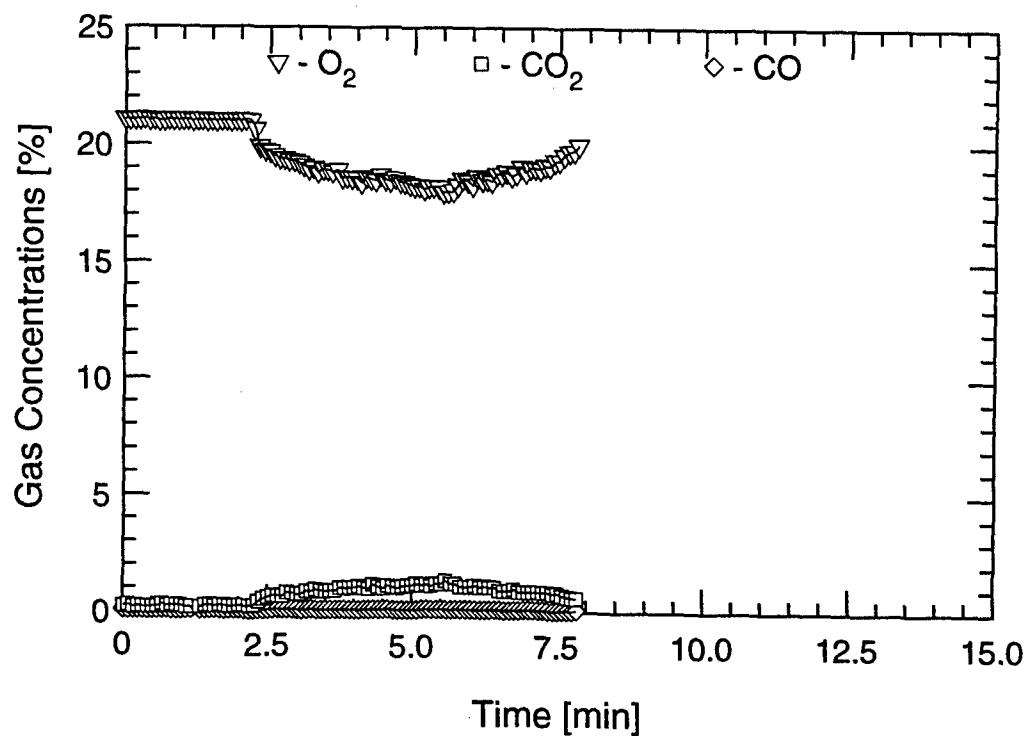


Forward Tree

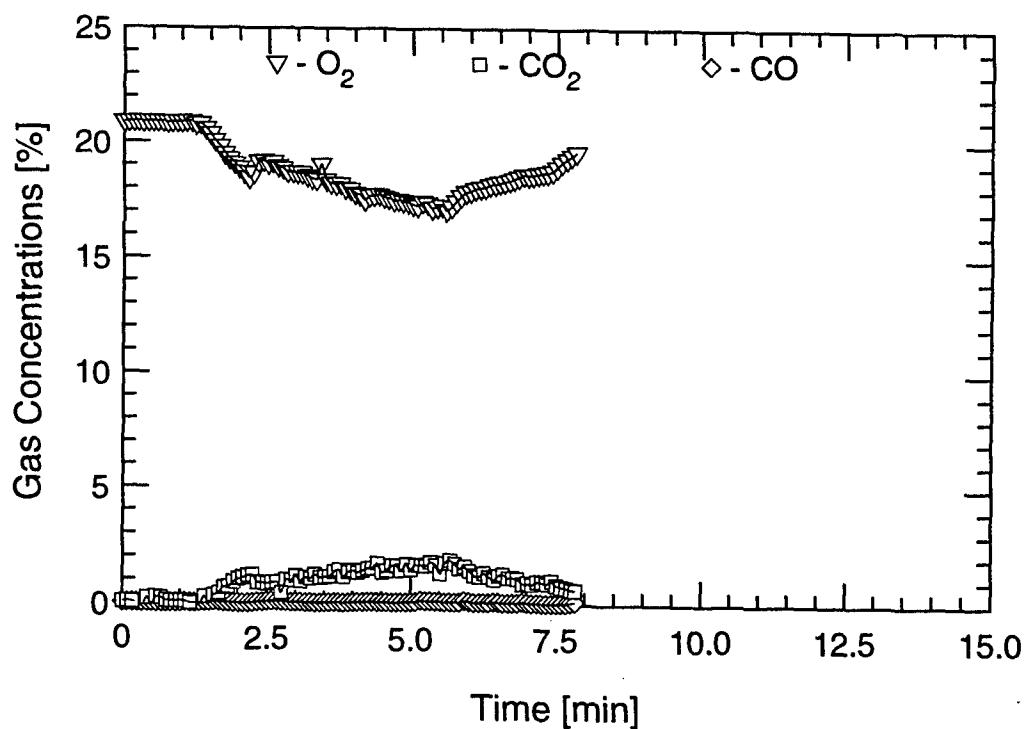
TEST #7



TEST #8

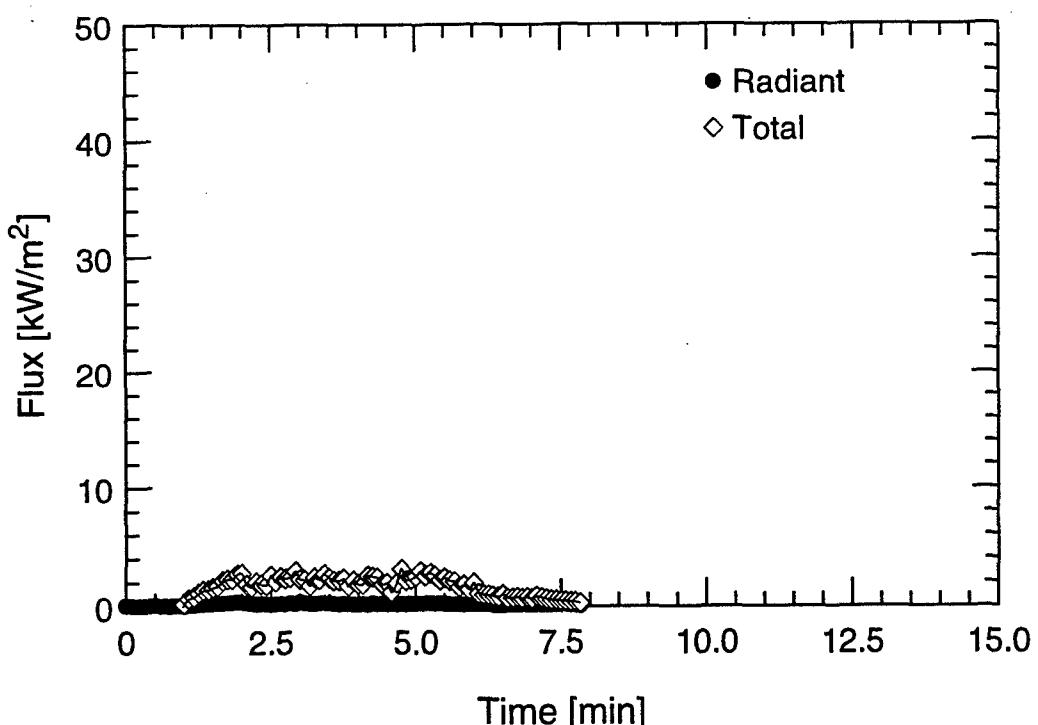


Forward Tree (Low)

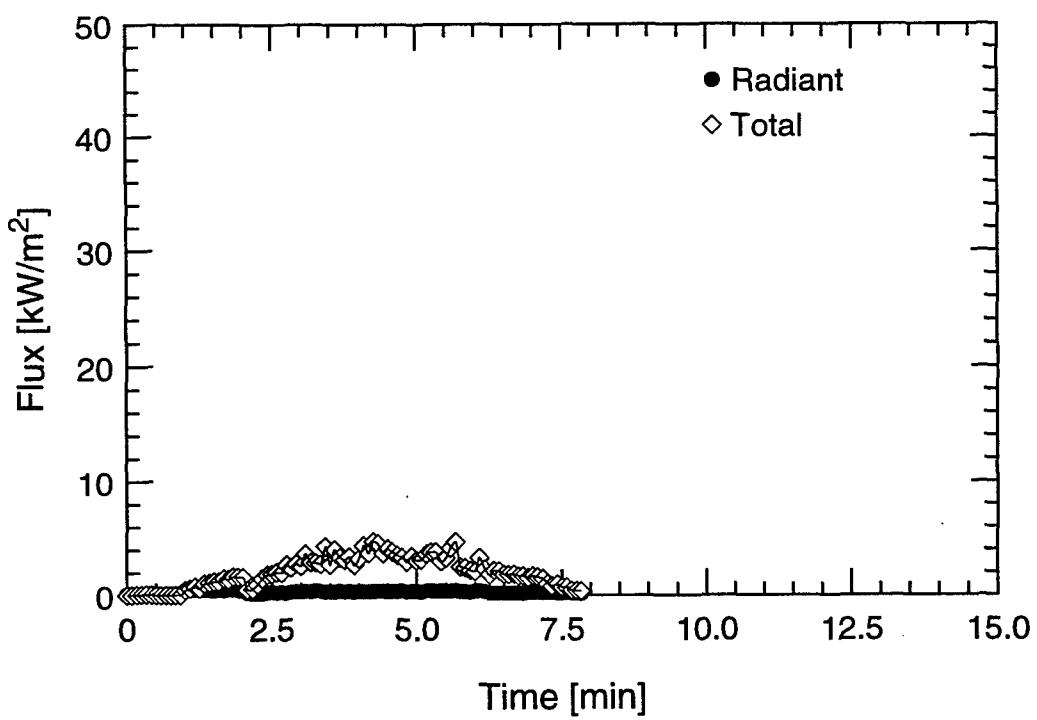


Forward Tree (High)

TEST #8

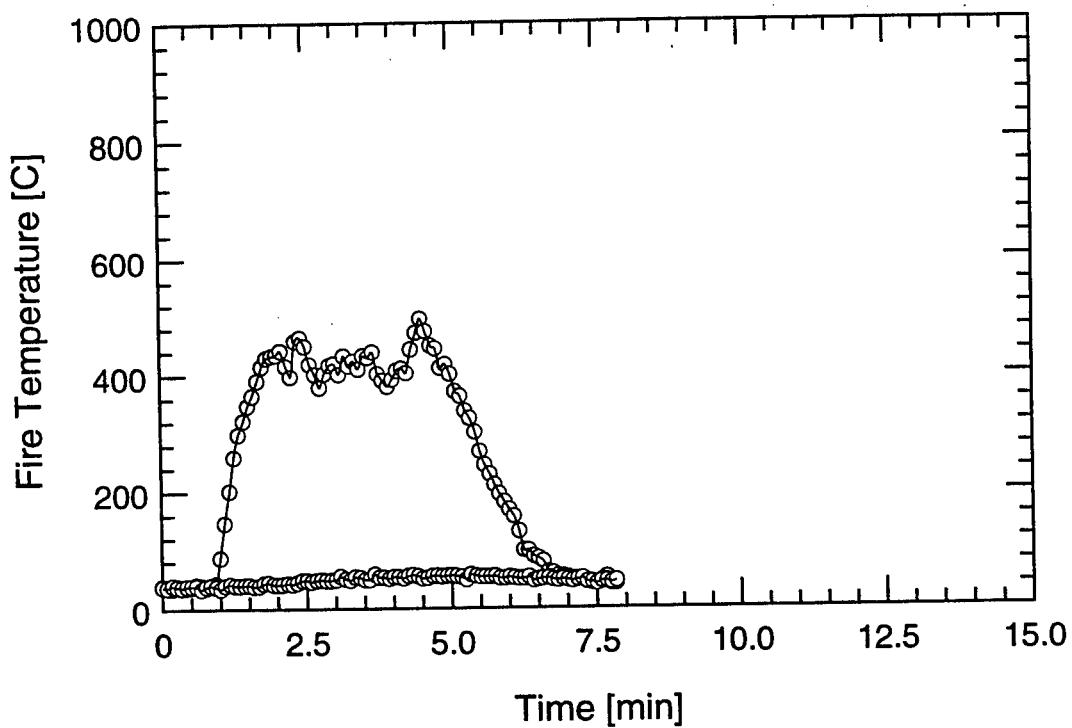


Overhead

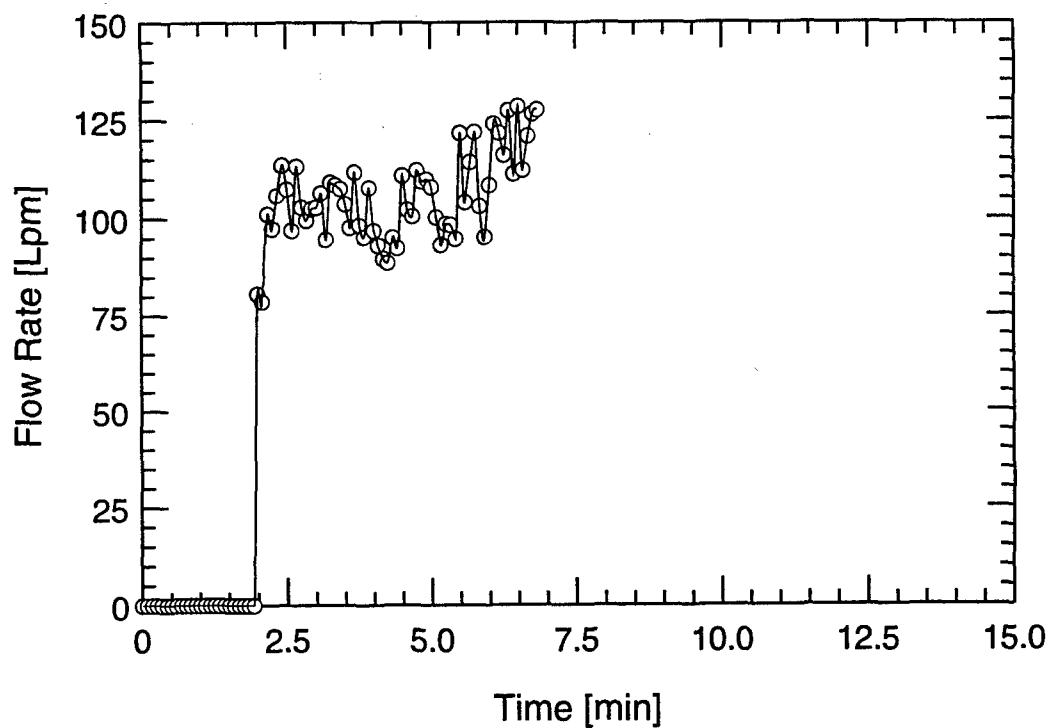


Forward Bulkhead

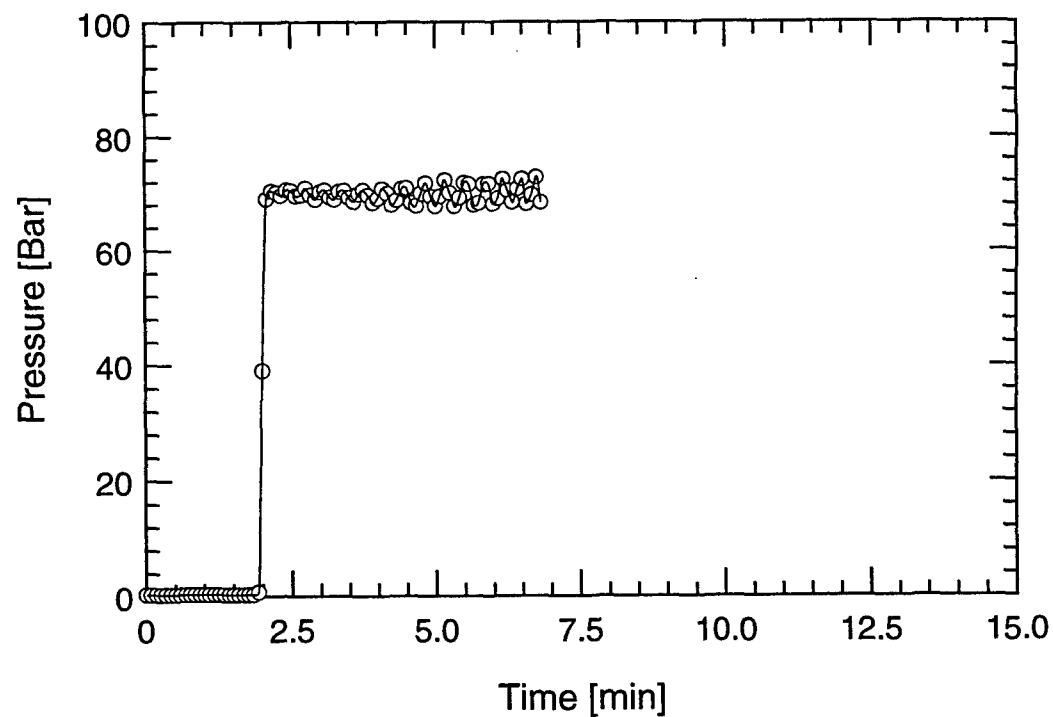
TEST #8



TEST #8

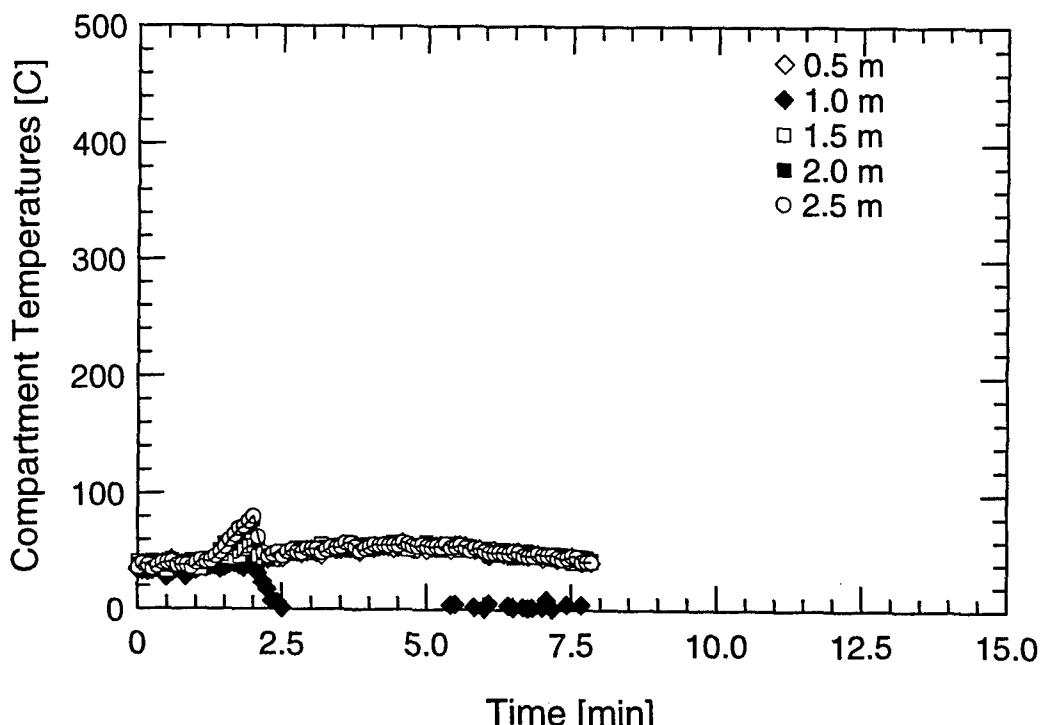


Water Mist System Flow Rate

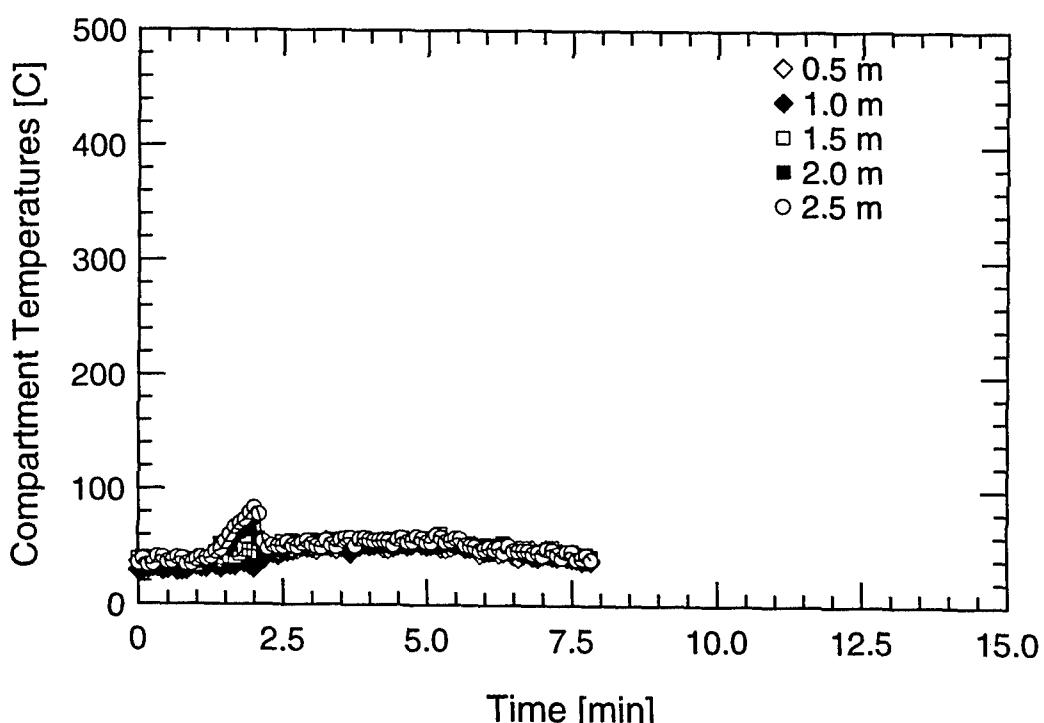


Water Mist System Pressure

TEST #8

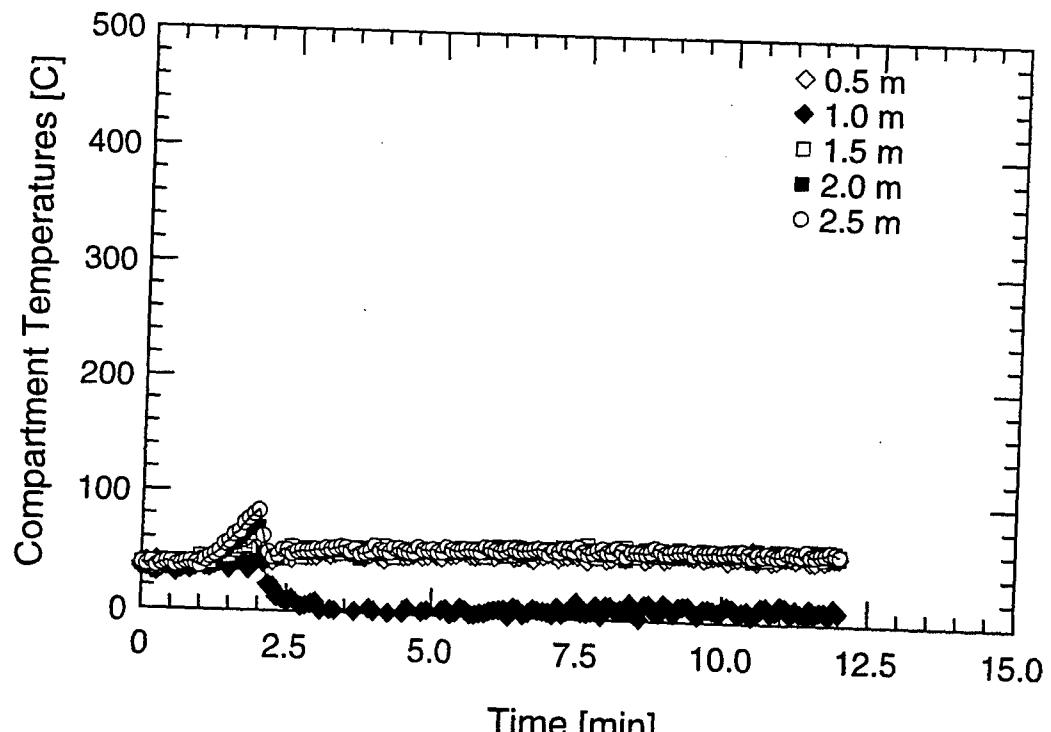


Aft Tree

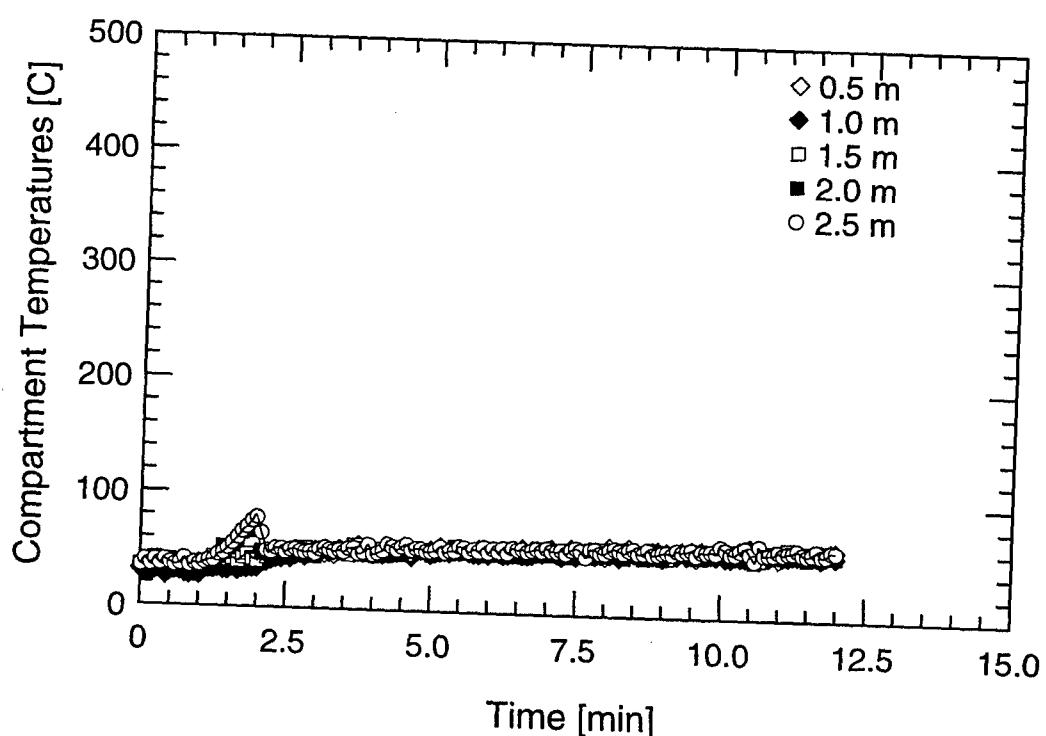


Forward Tree

TEST #8

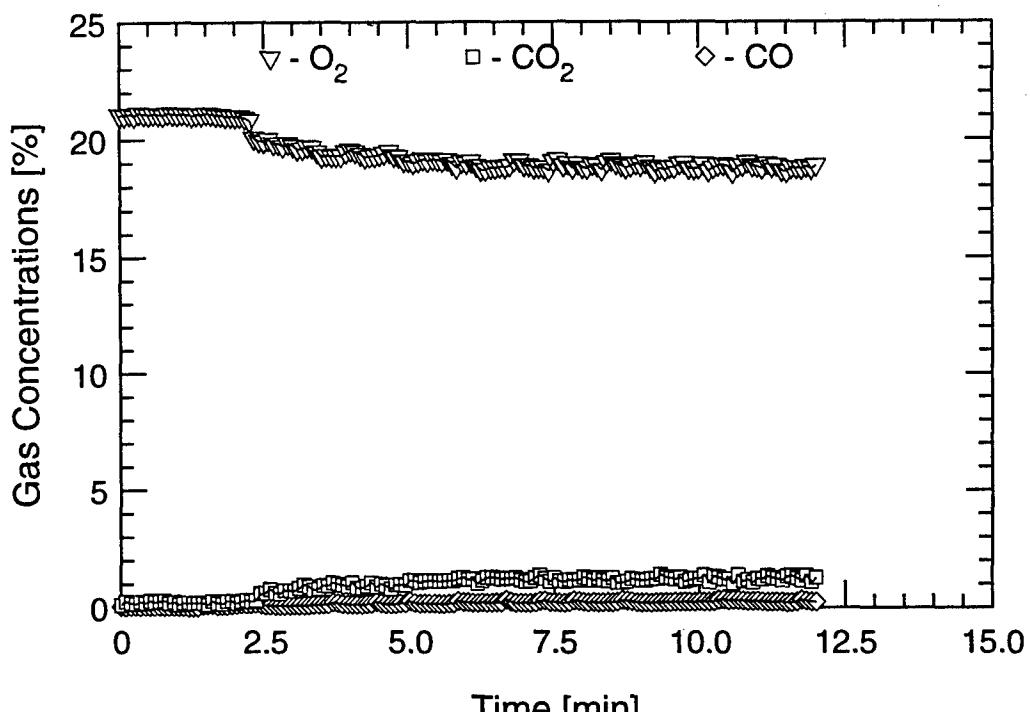


Aft Tree

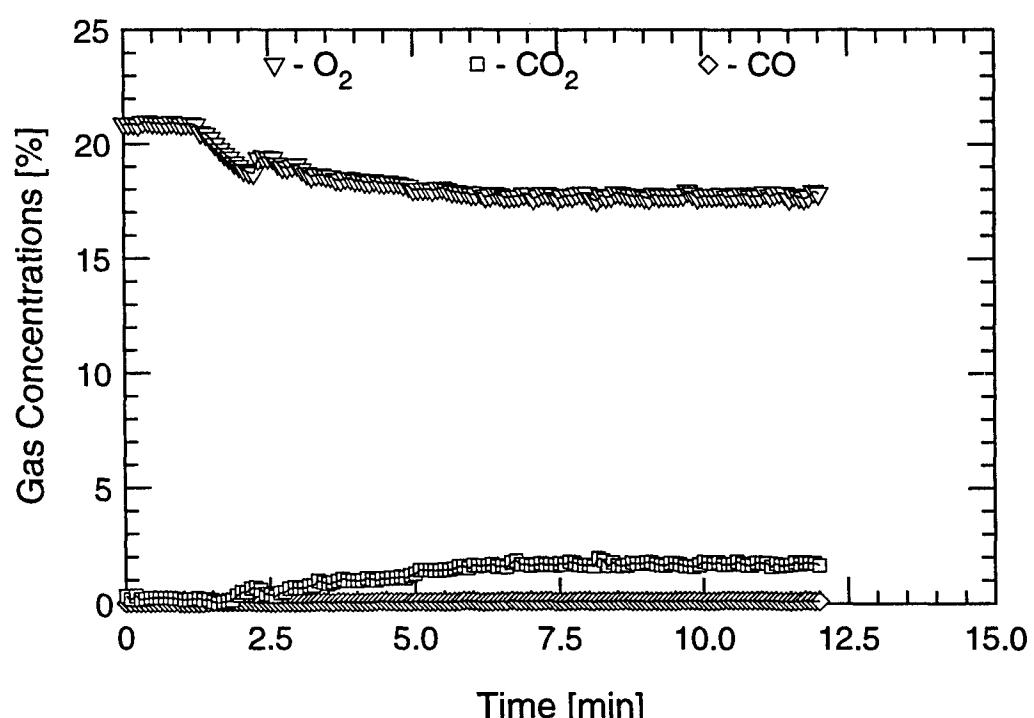


Forward Tree

TEST #9

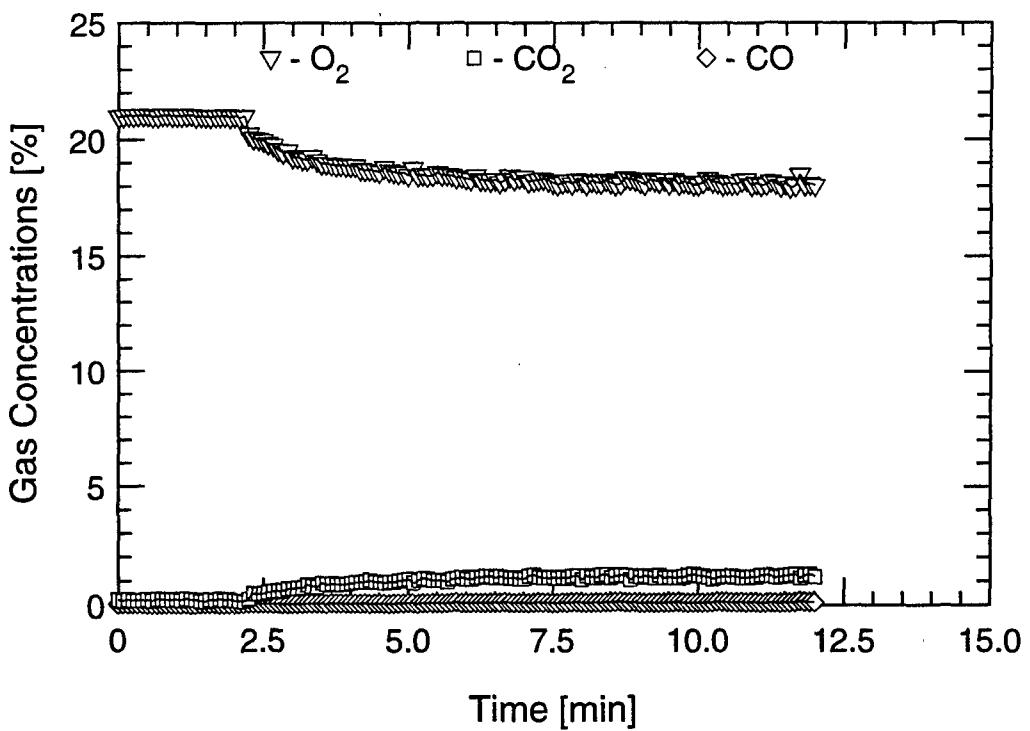


Aft Tree (Low)

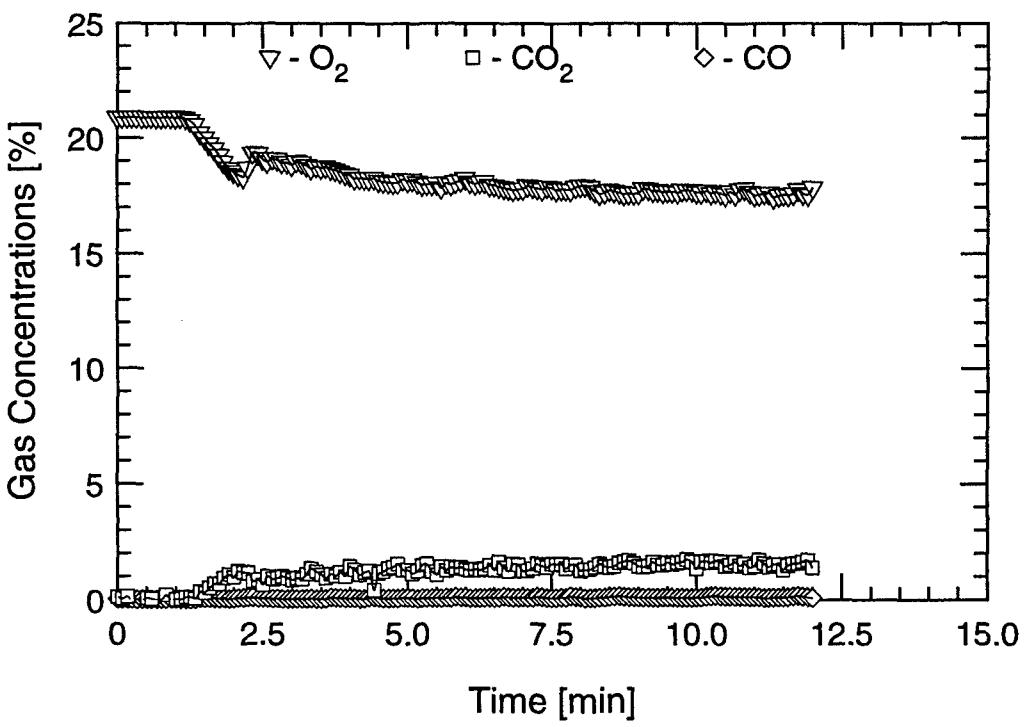


Aft Tree (High)

TEST #9

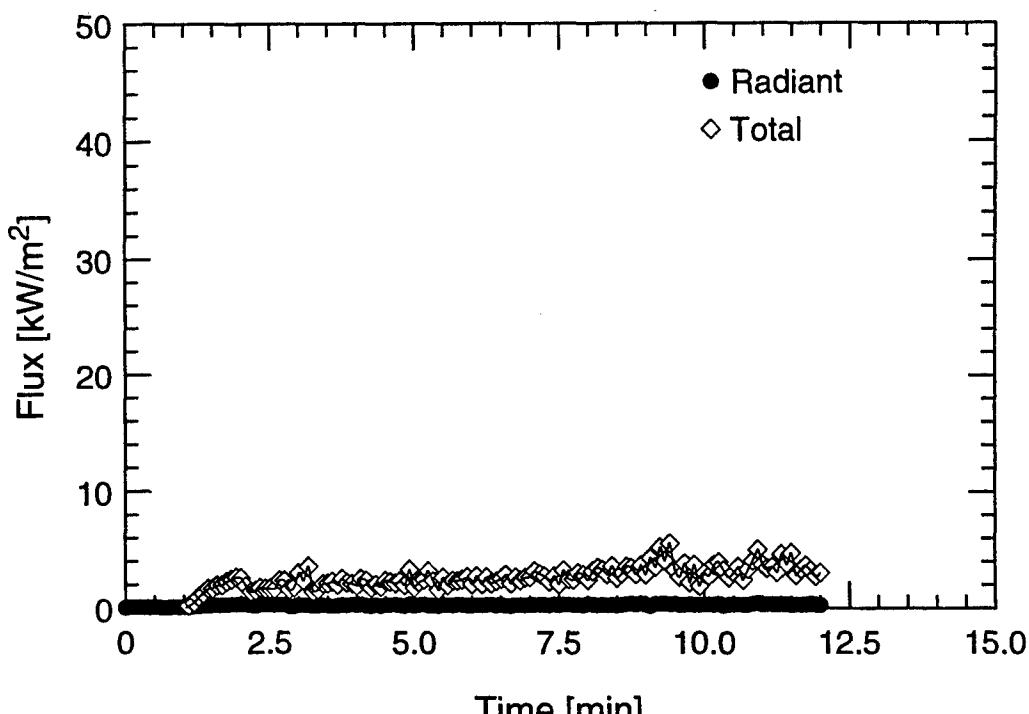


Forward Tree (Low)

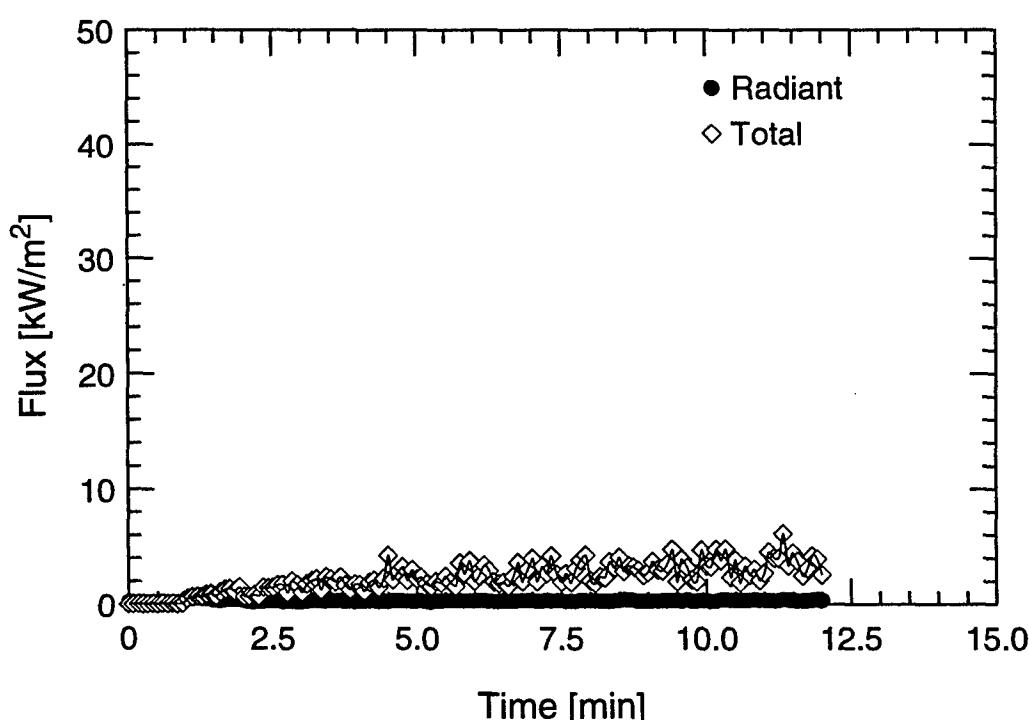


Forward Tree (High)

TEST #9

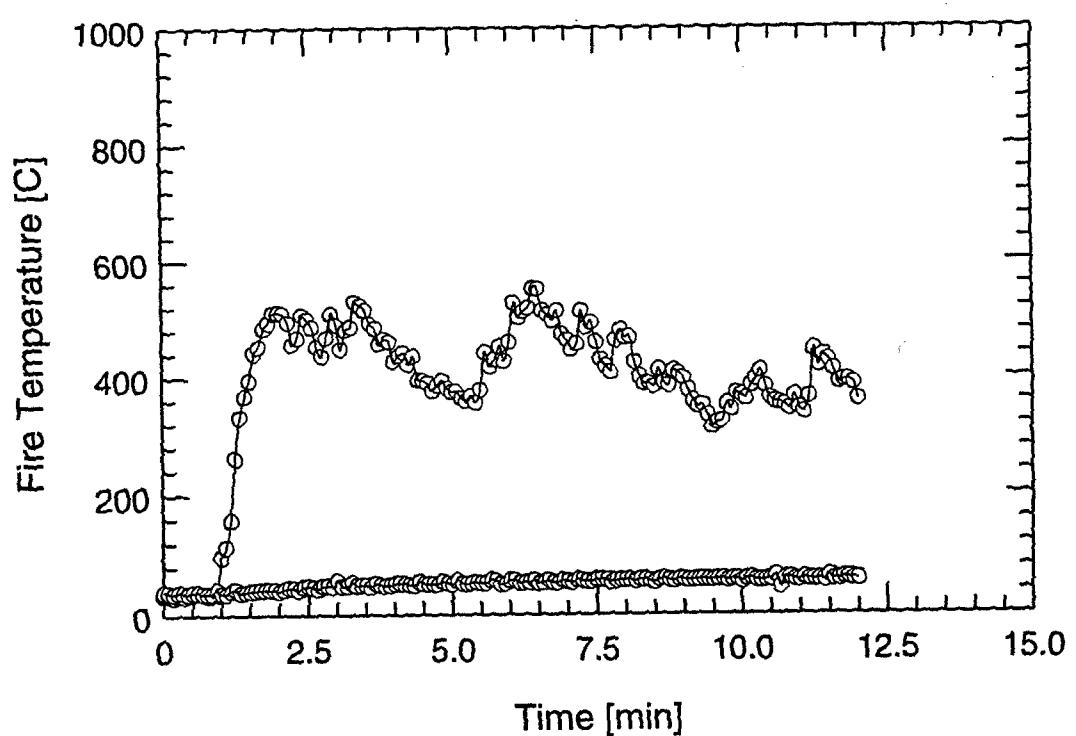


Overhead



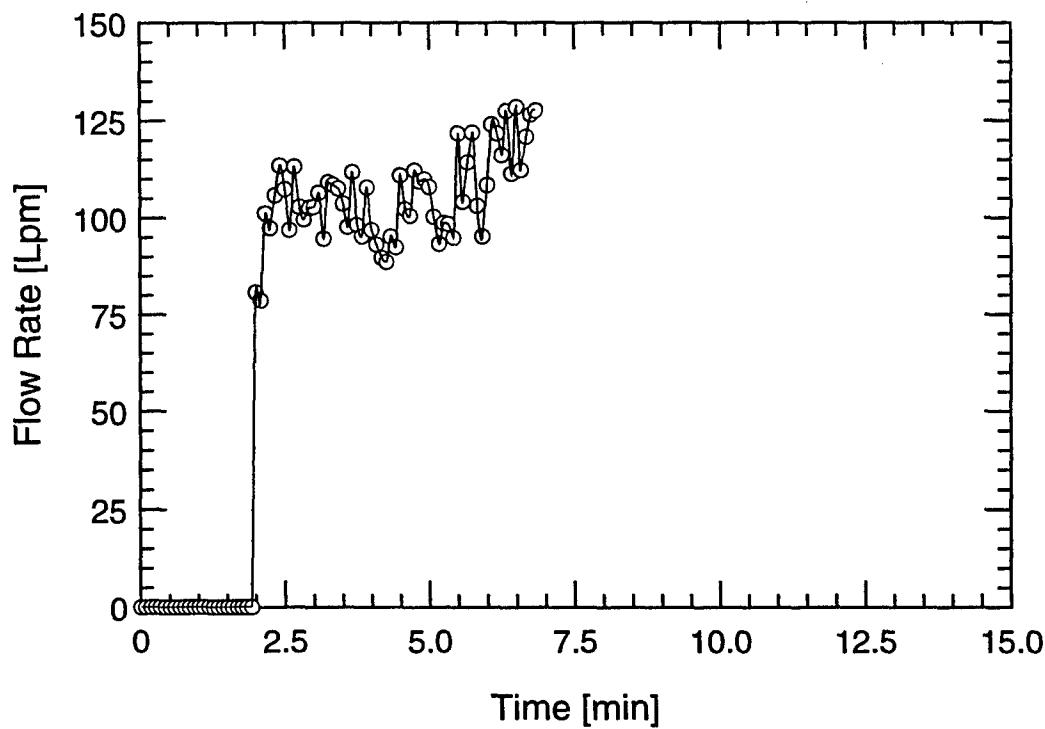
Forward Bulkhead

TEST #9

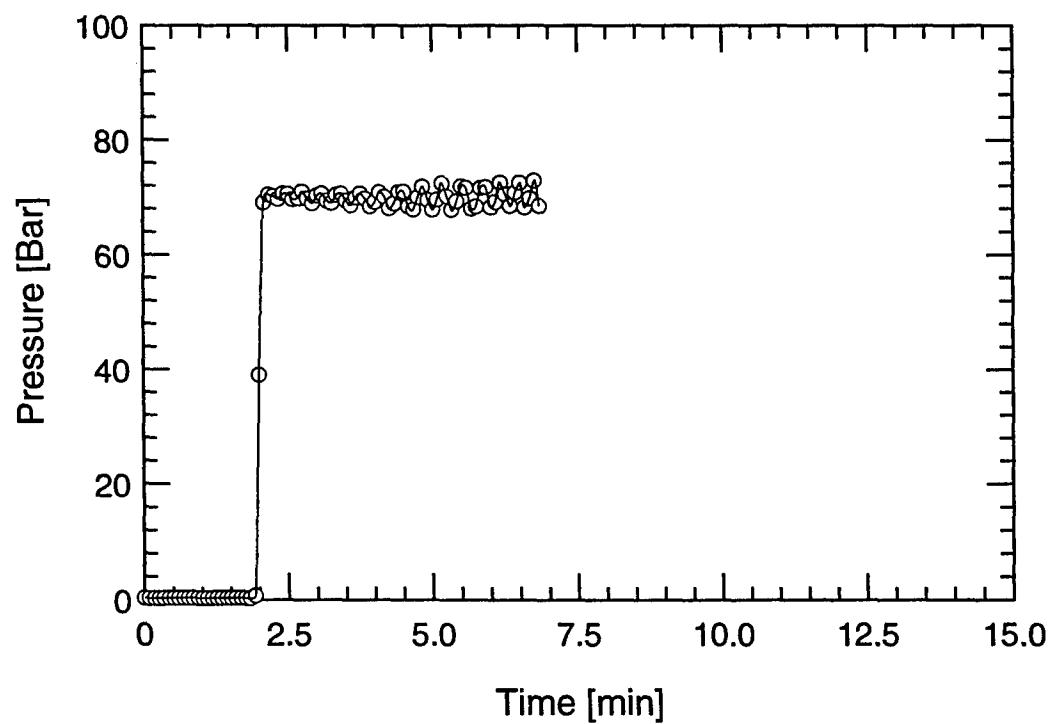


TEST #9

B-56

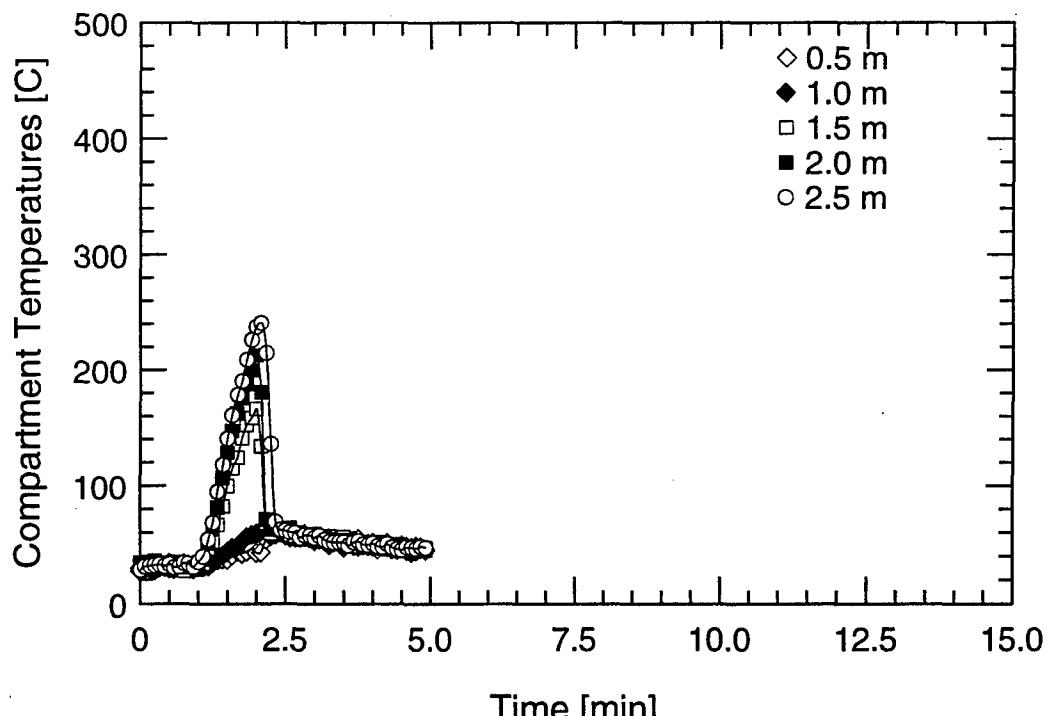


Water Mist System Flow Rate

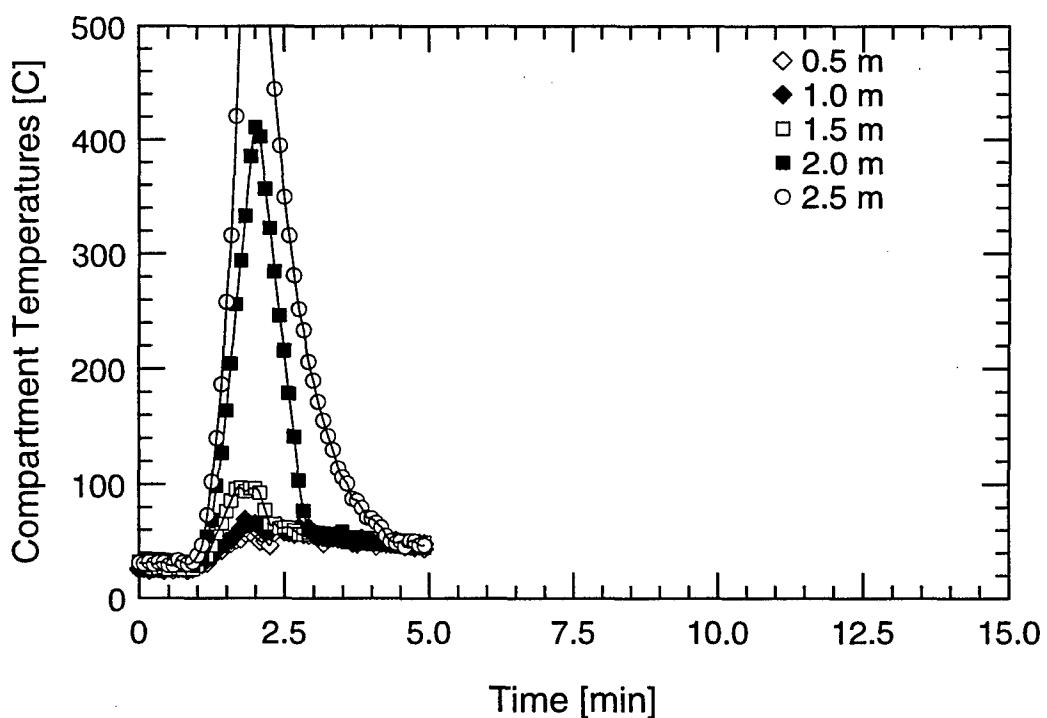


Water Mist System Pressure

TEST #9

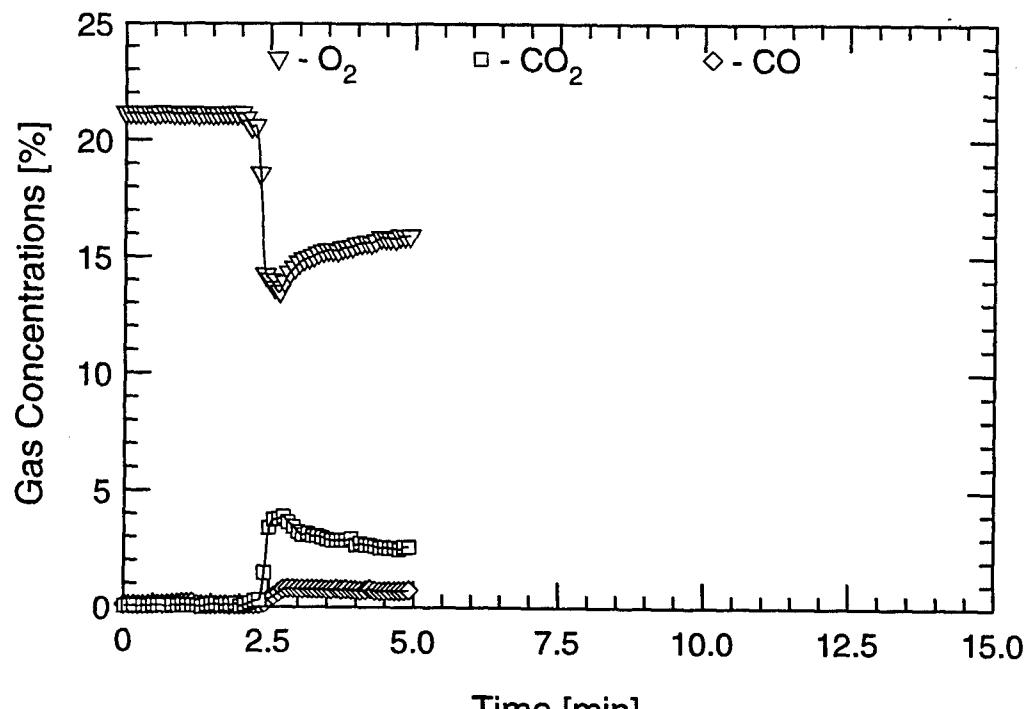


Aft Tree

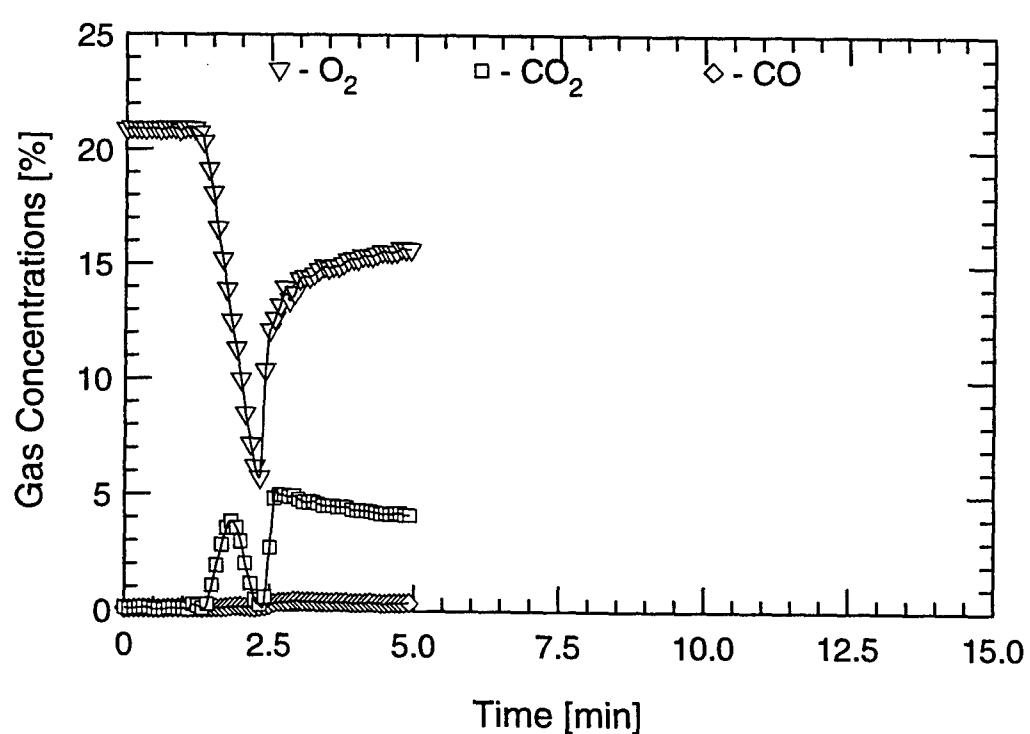


Forward Tree

TEST #10

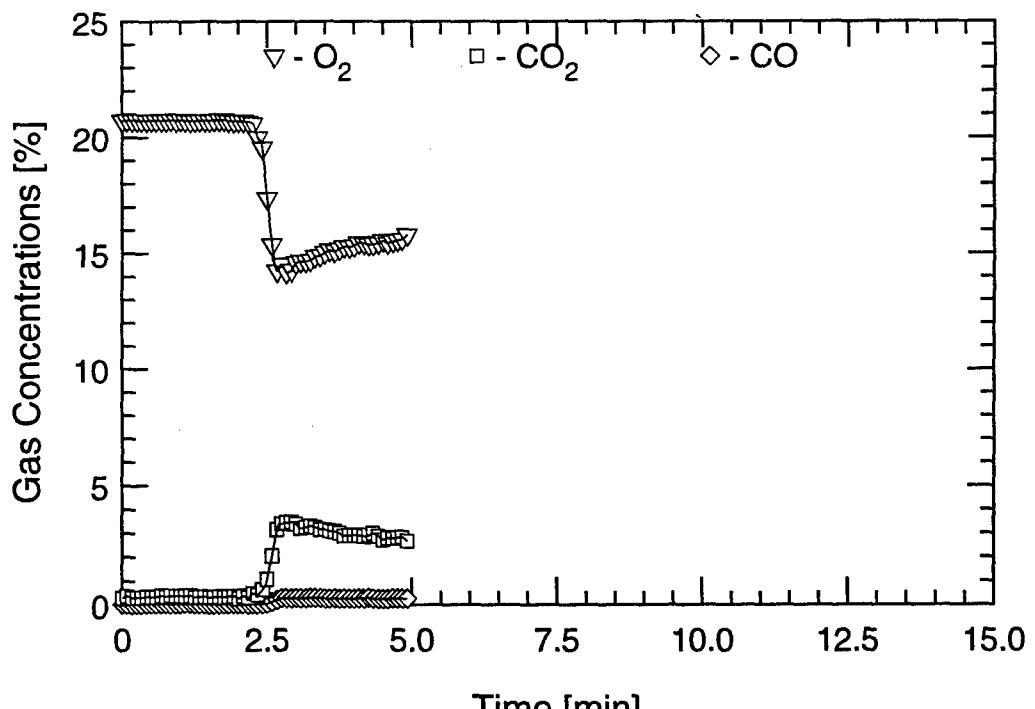


Aft Tree (Low)

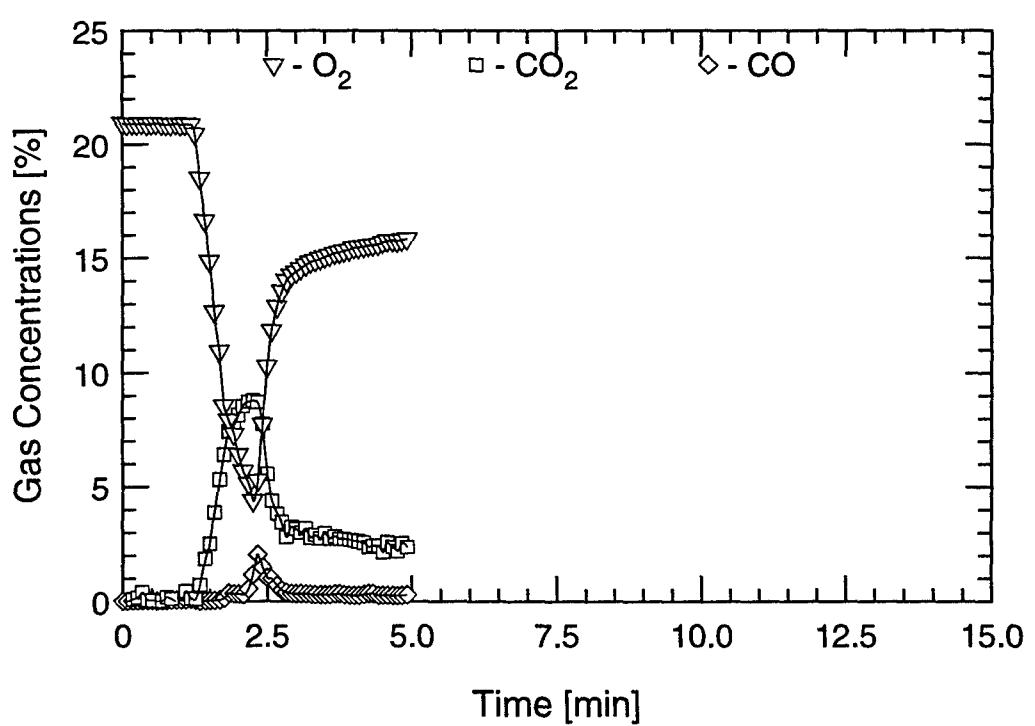


Aft Tree (High)

TEST #10

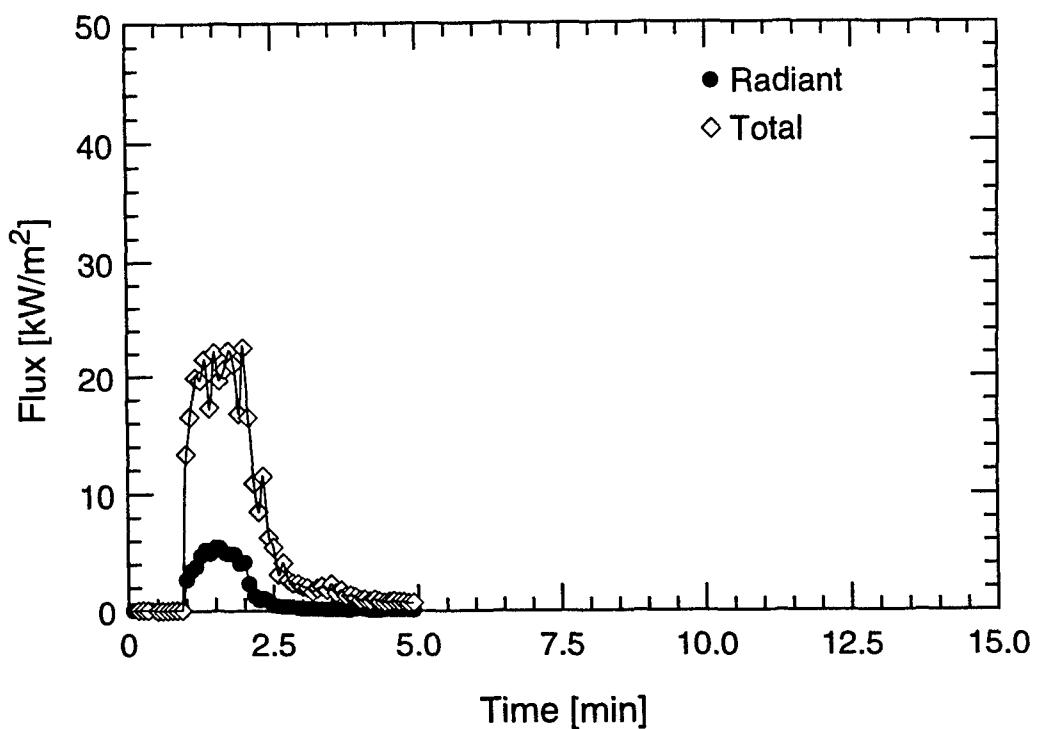


Forward Tree (Low)

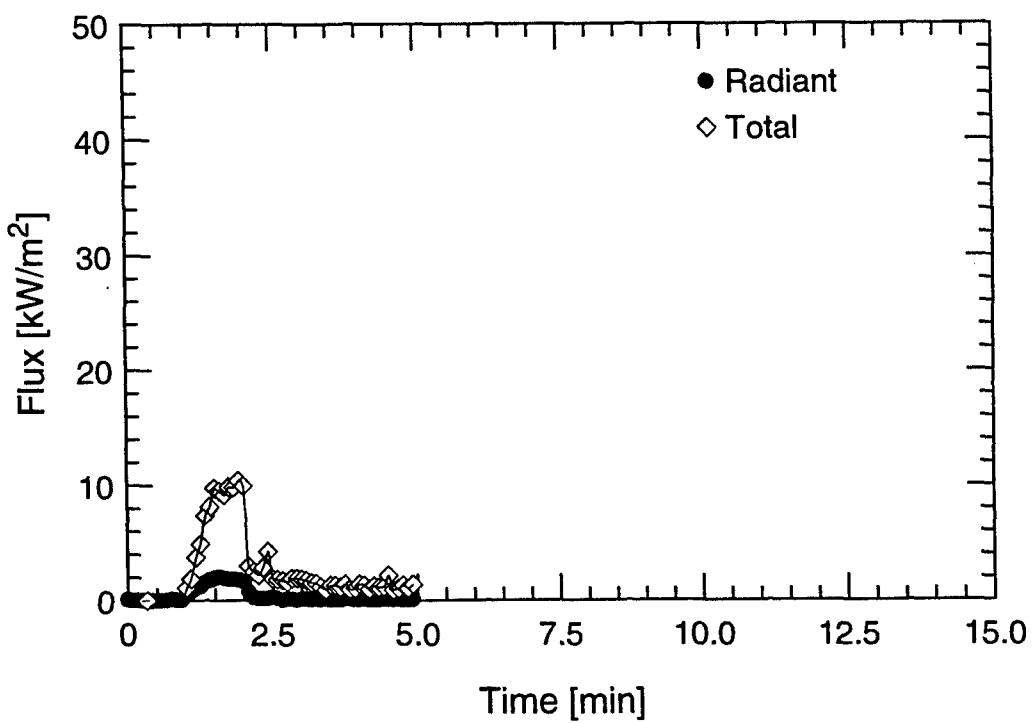


Forward Tree (High)

TEST #10

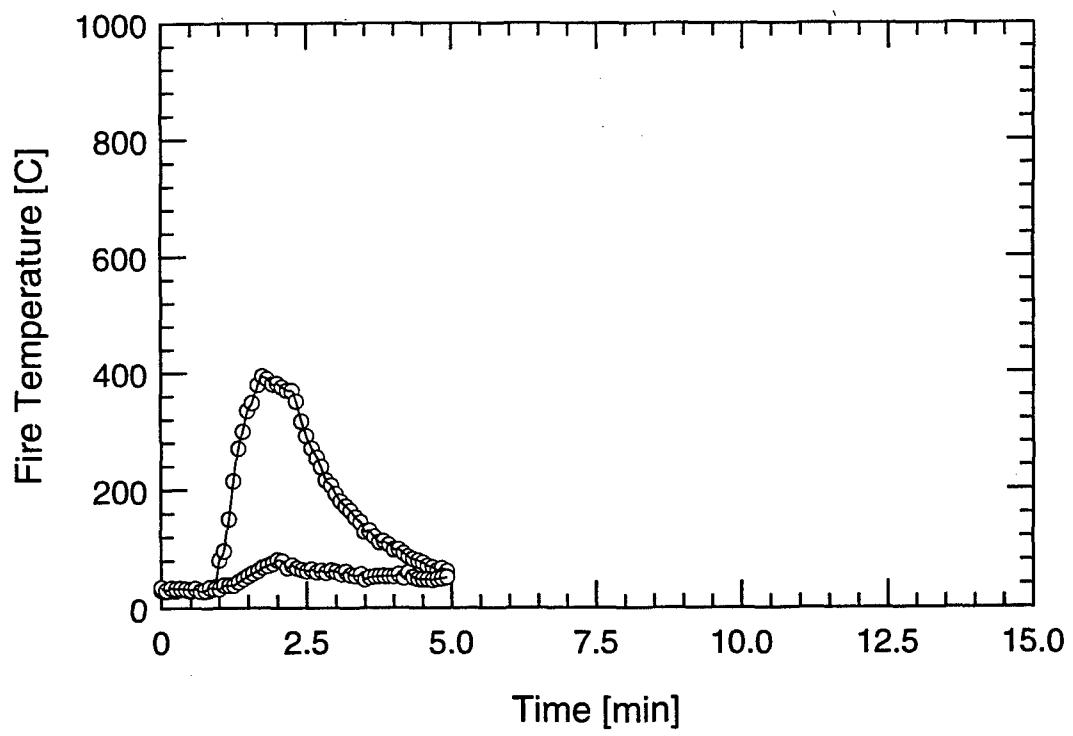


Overhead



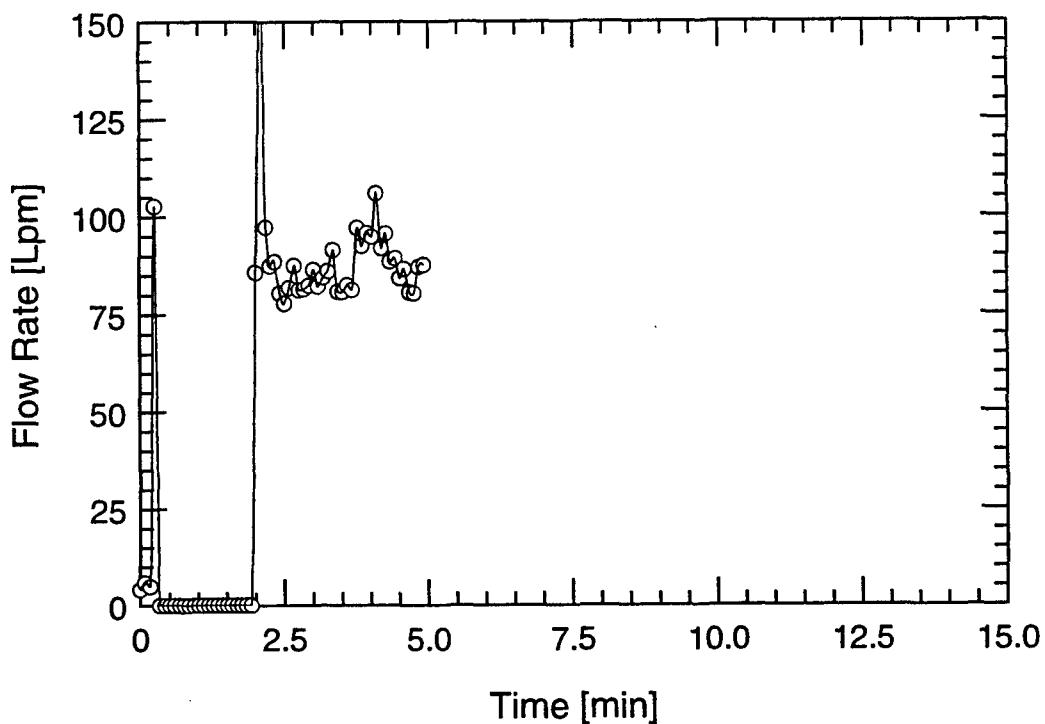
Forward Bulkhead

TEST #10

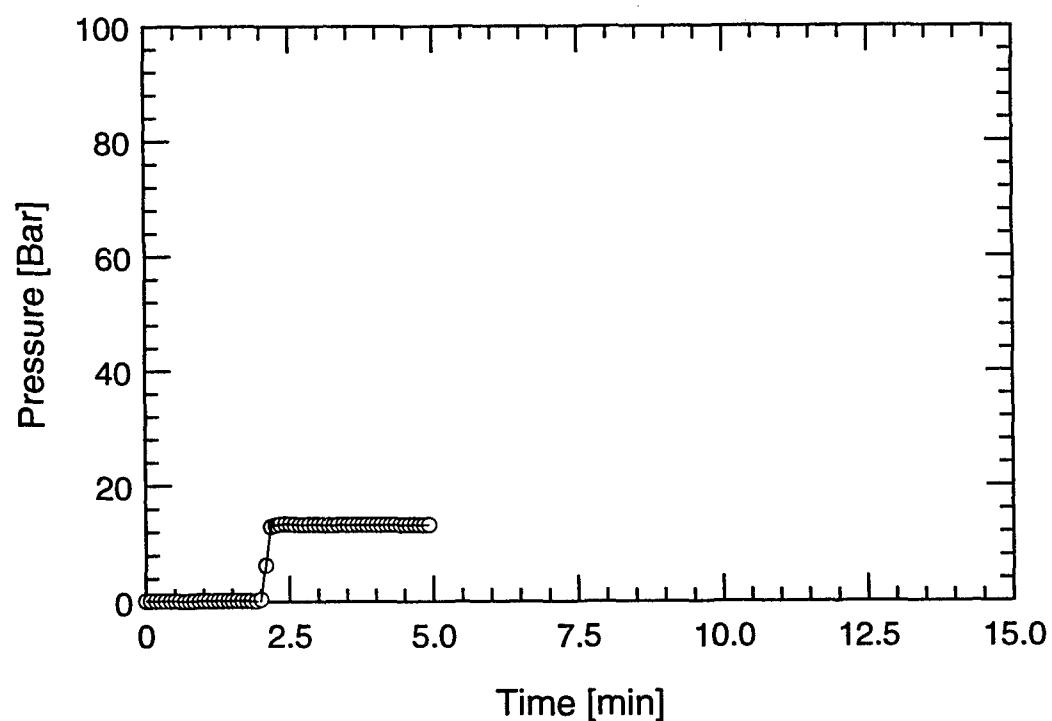


TEST #10

B-62

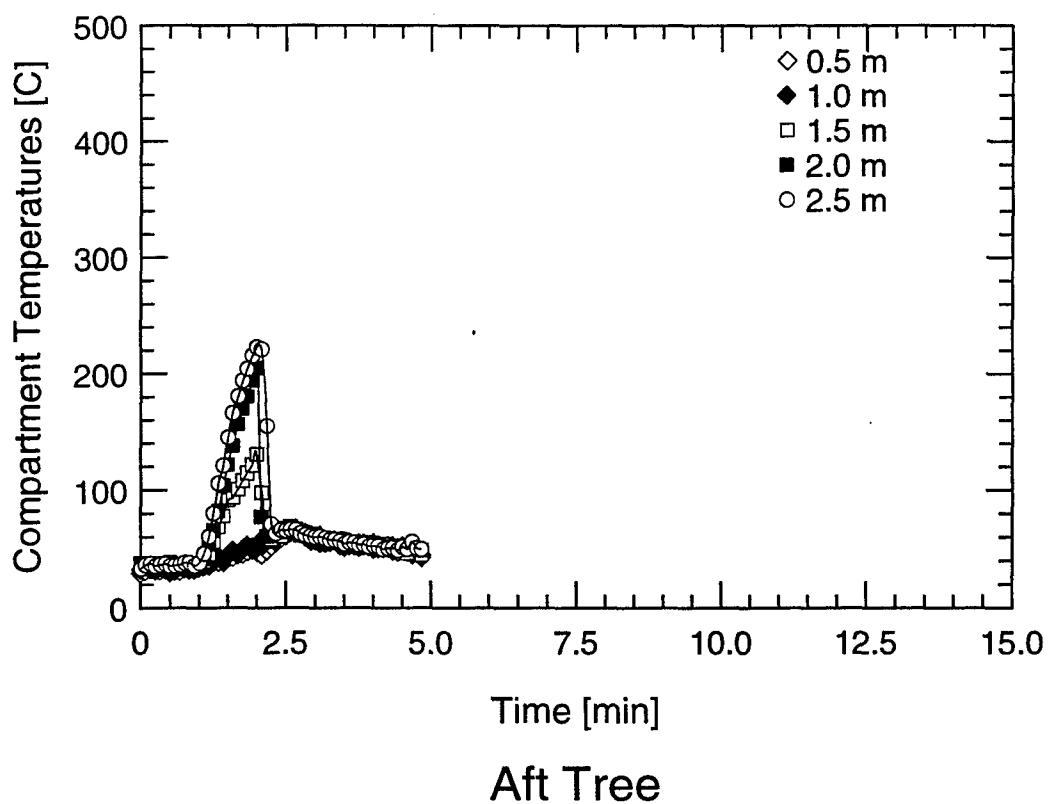


Water Mist System Flow Rate

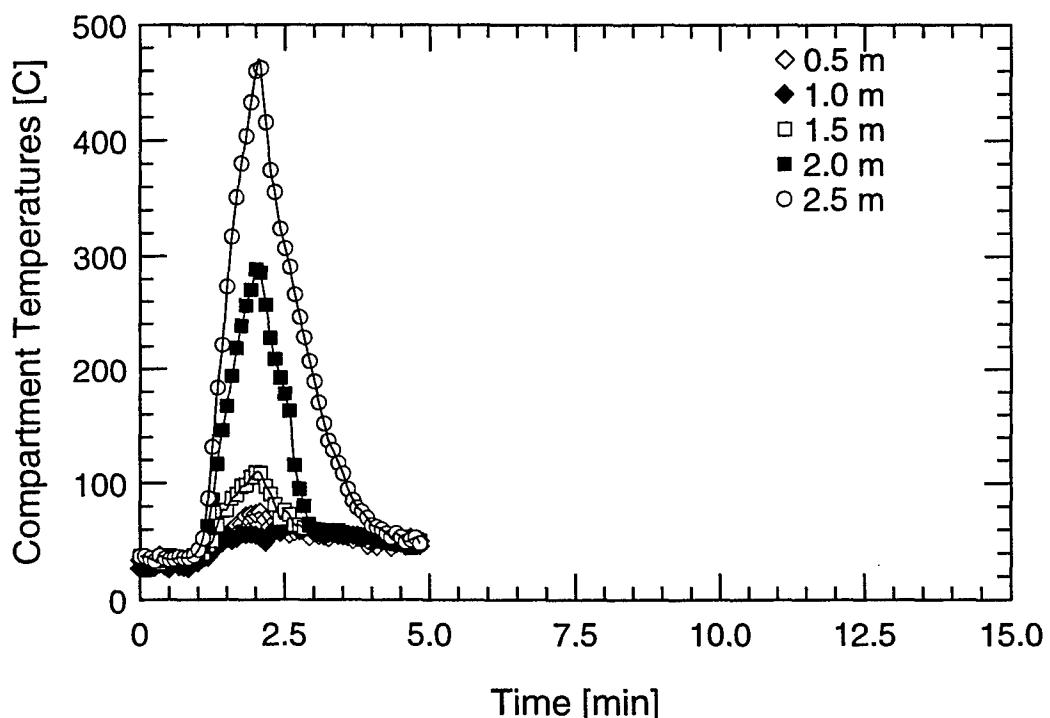


Water Mist System Pressure

TEST #10

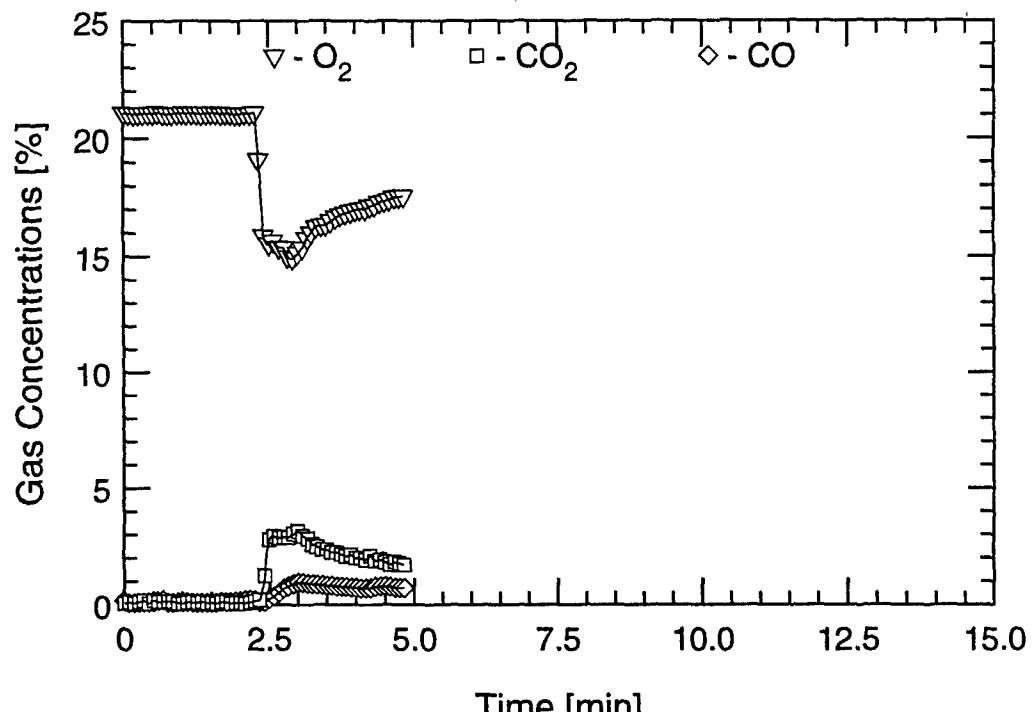


Aft Tree

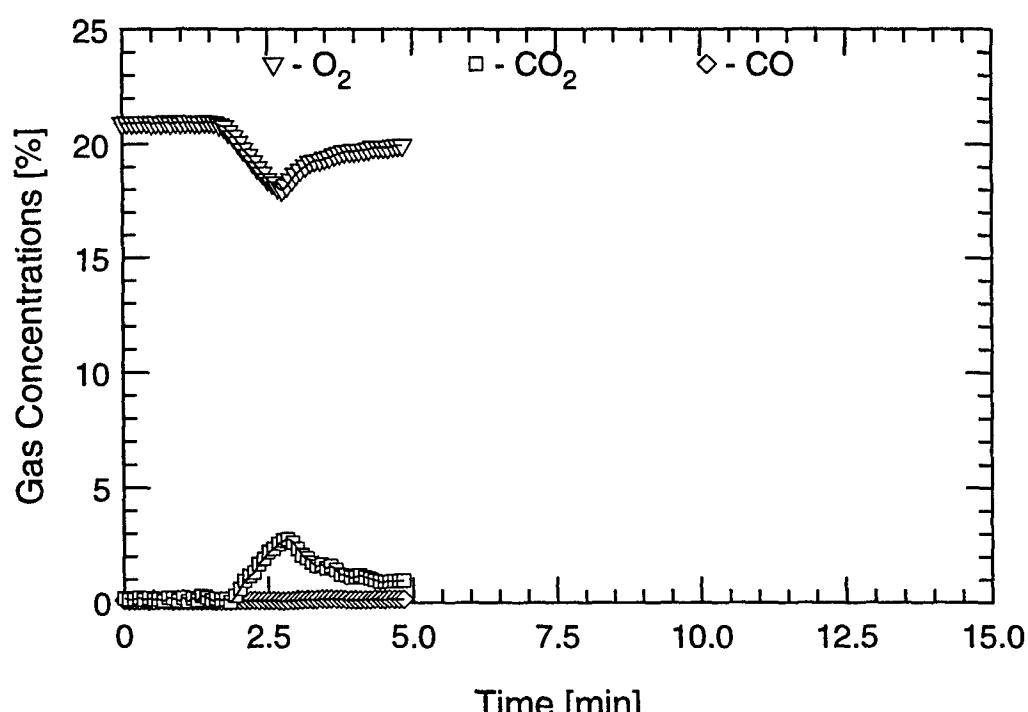


Forward Tree

TEST #11

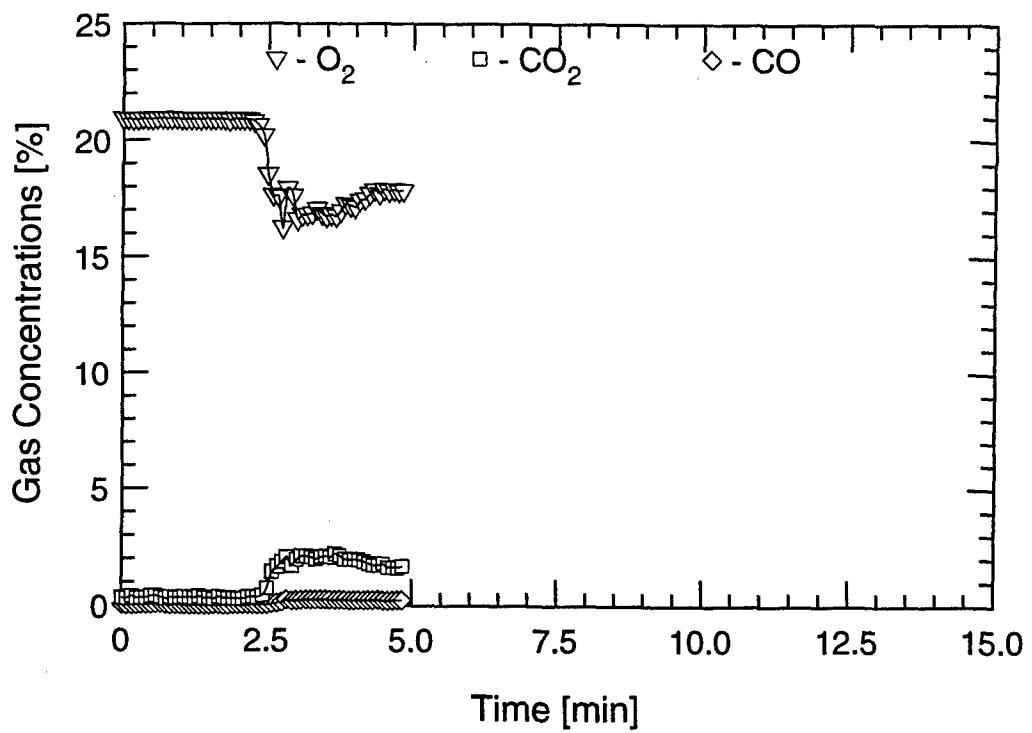


Aft Tree (Low)

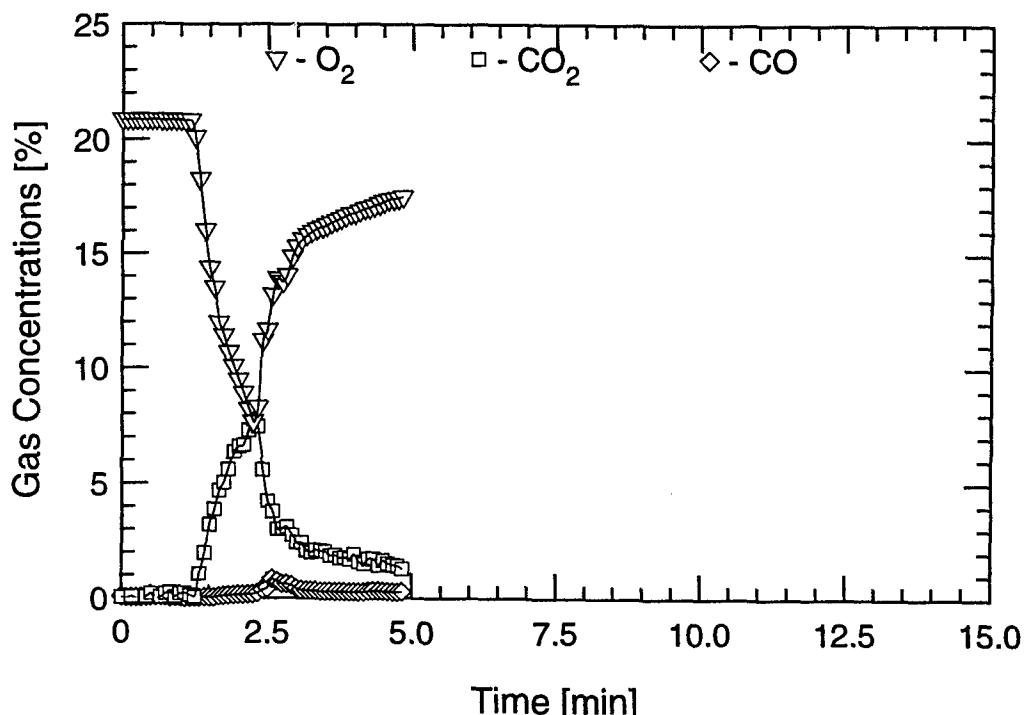


Aft Tree (High)

TEST #11

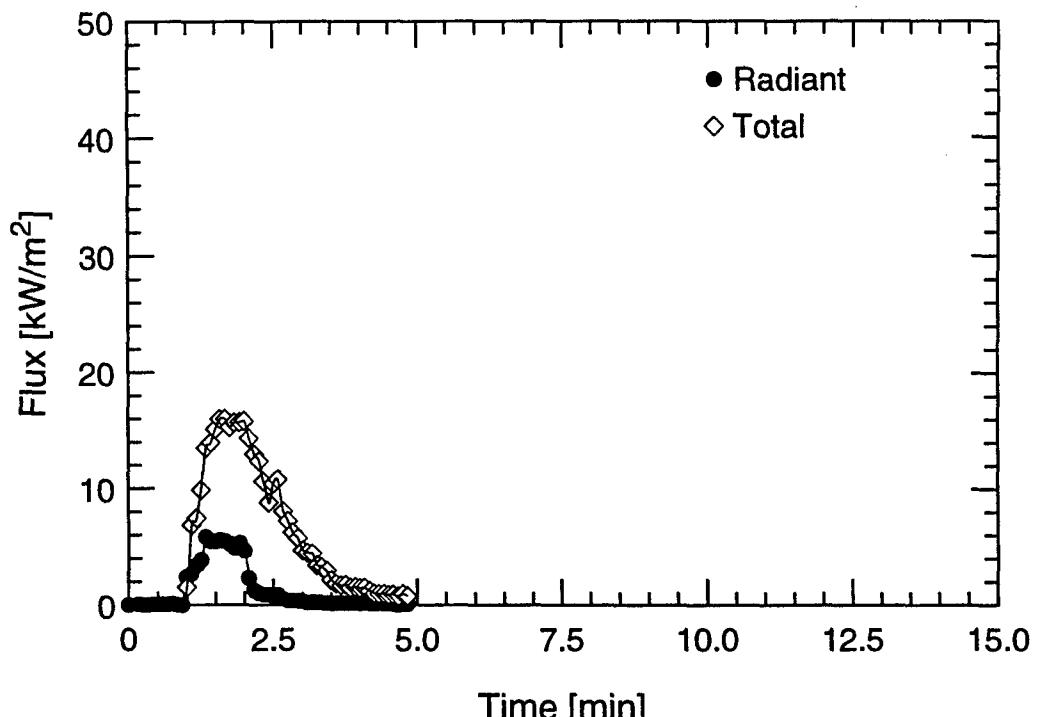


Forward Tree (Low)

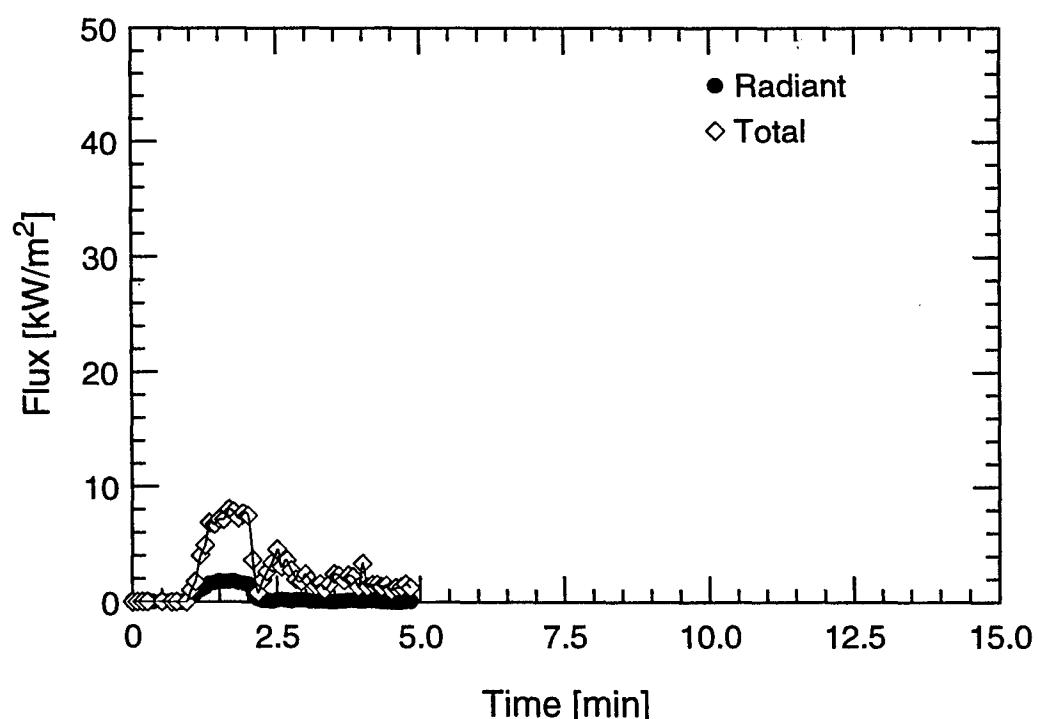


Forward Tree (High)

TEST #11

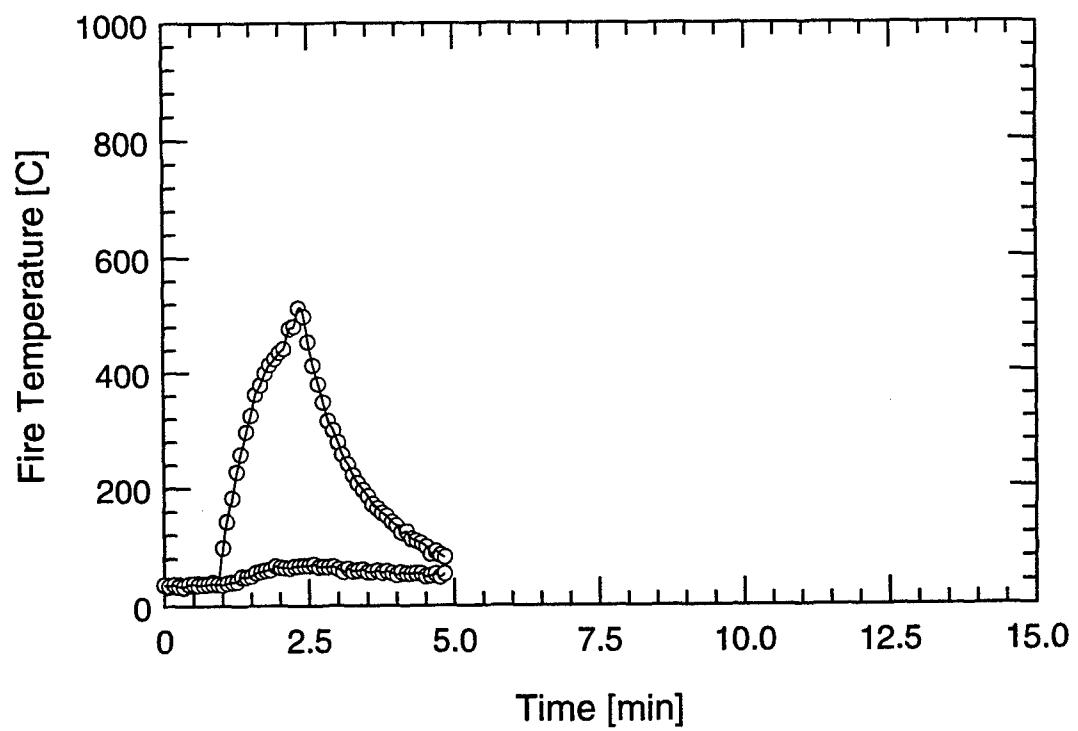


Overhead



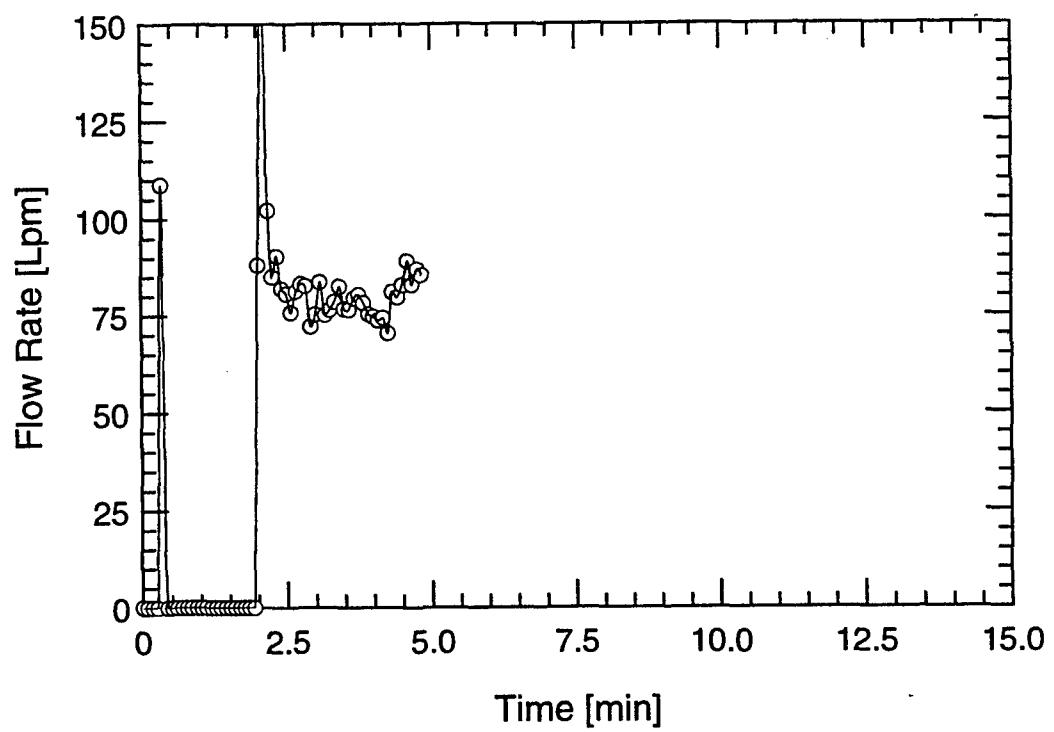
Forward Bulkhead

TEST #11

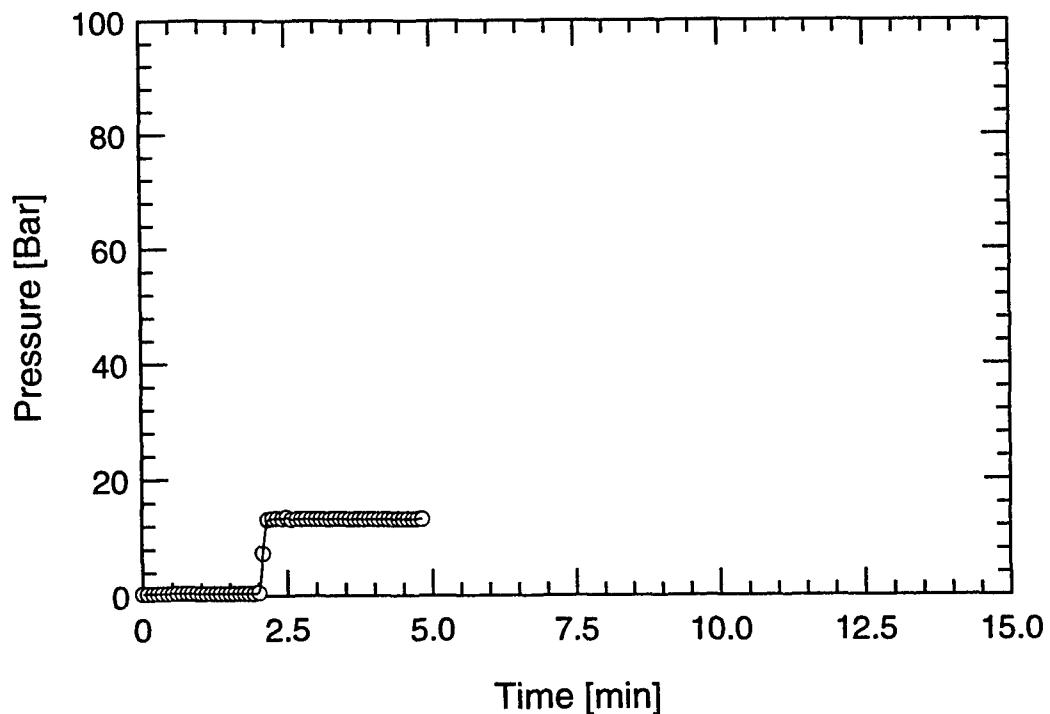


TEST #11

B-68

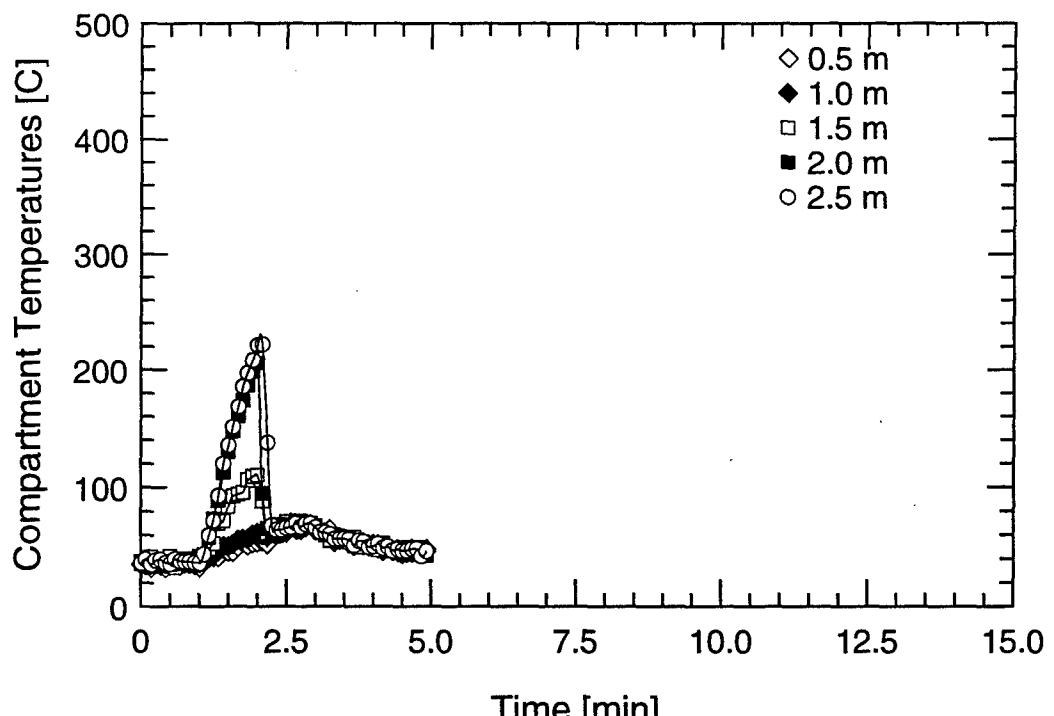


Water Mist System Flow Rate

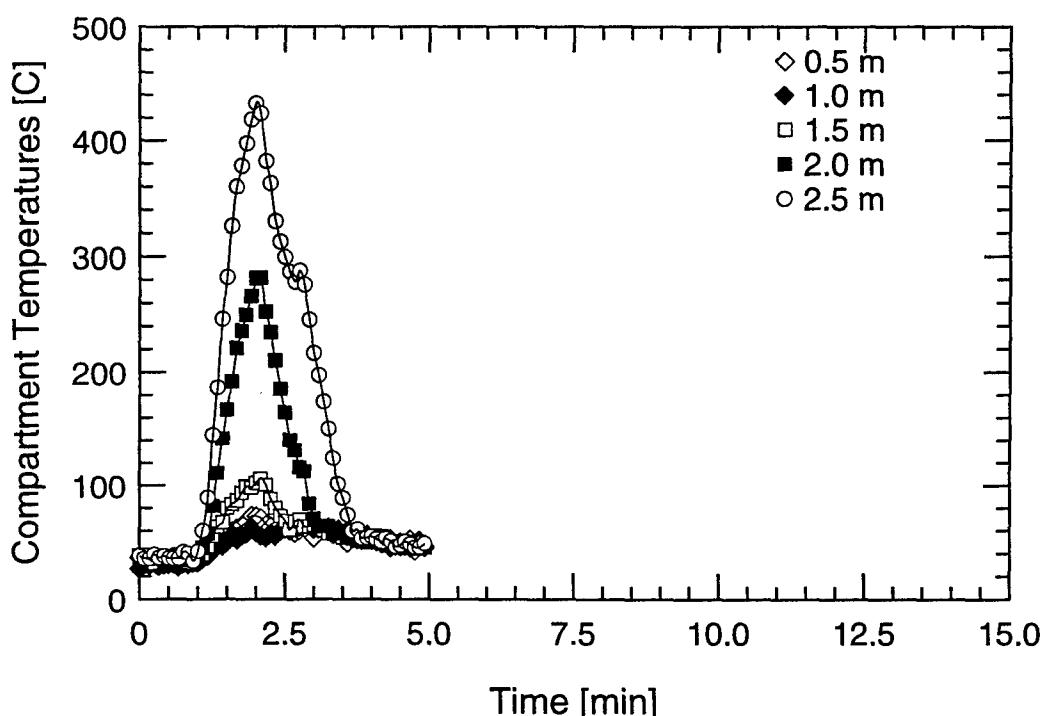


Water Mist System Pressure

TEST #11

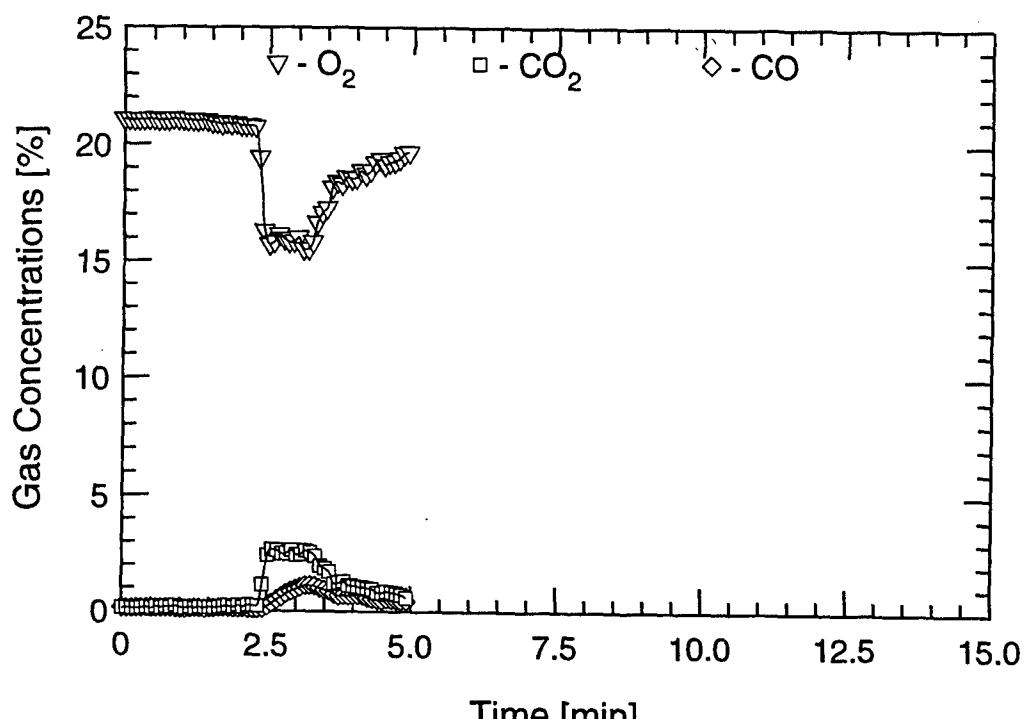


Aft Tree

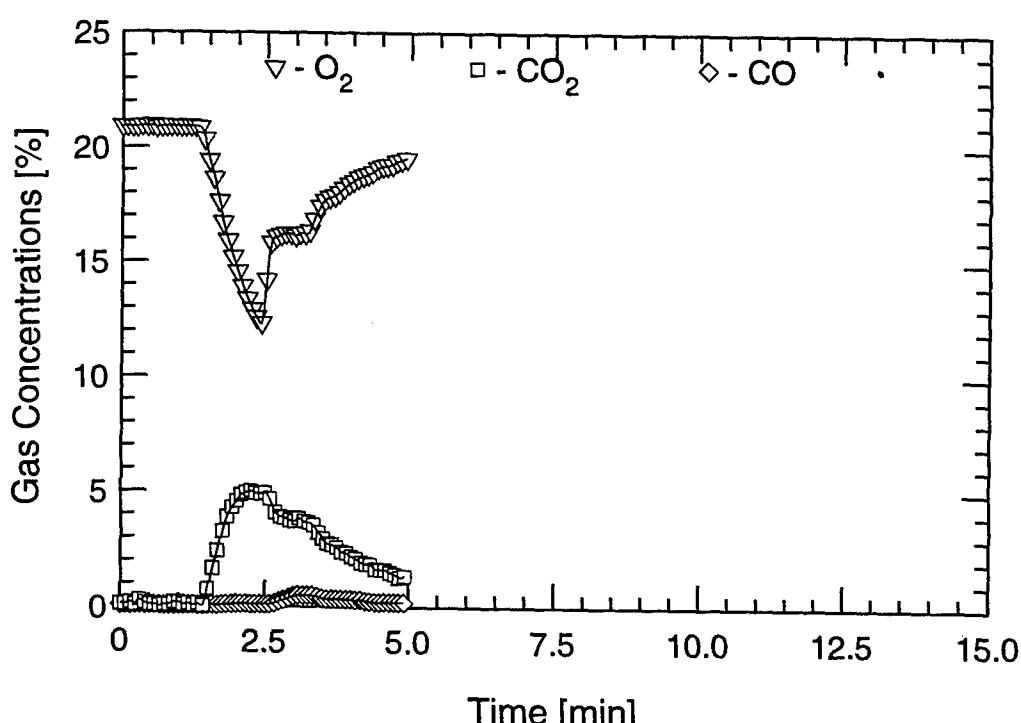


Forward Tree

TEST #12

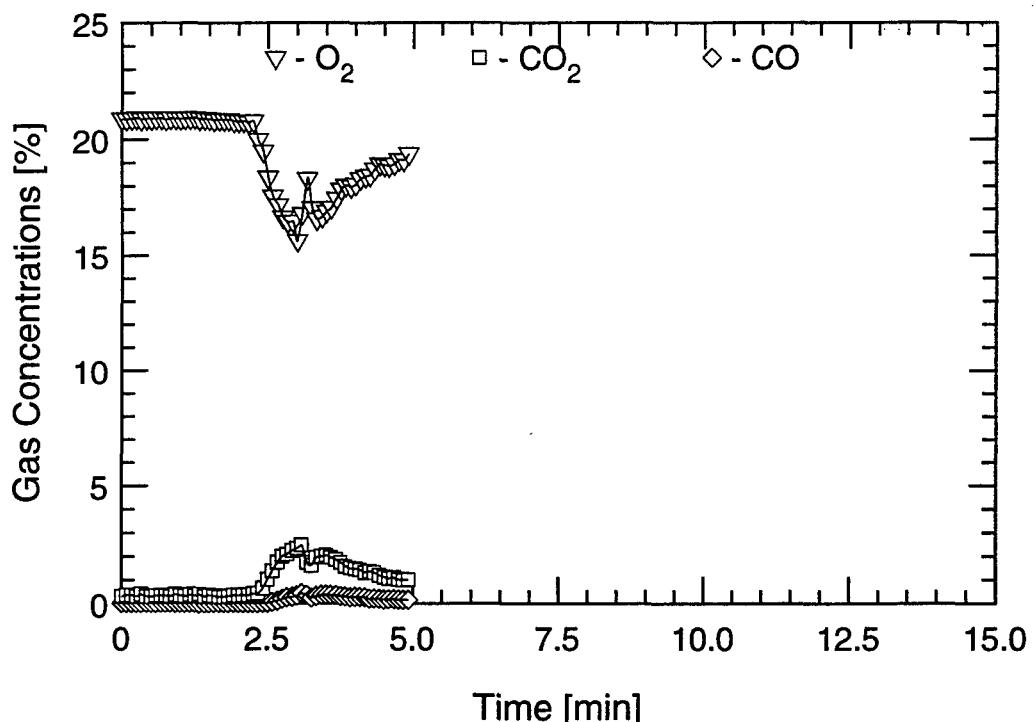


Aft Tree (Low)

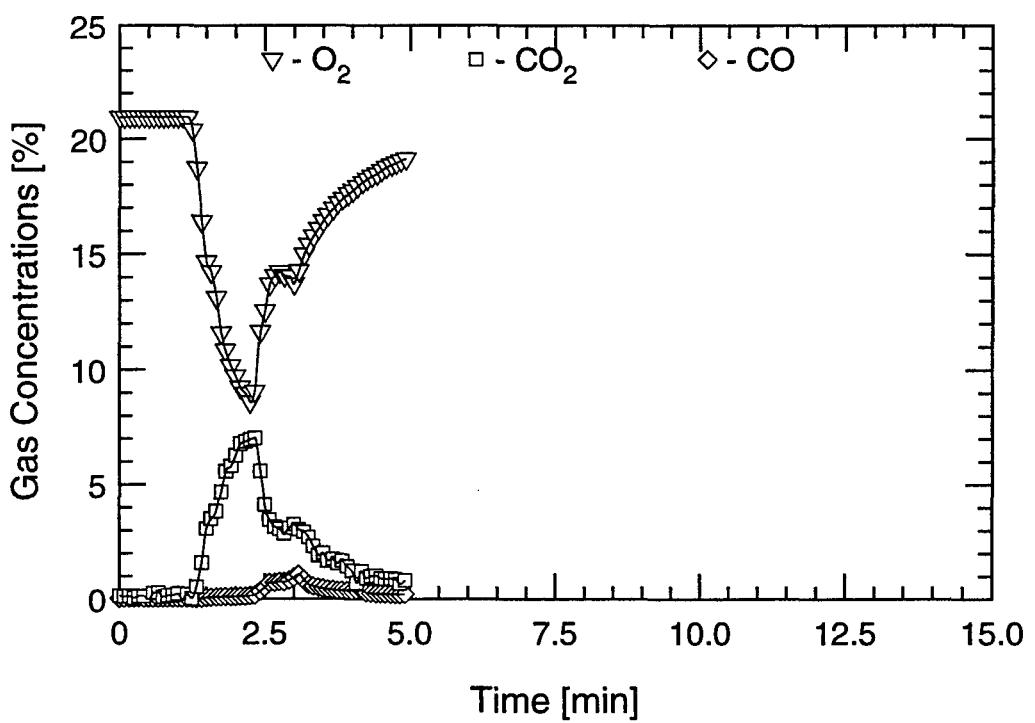


Aft Tree (High)

TEST #12

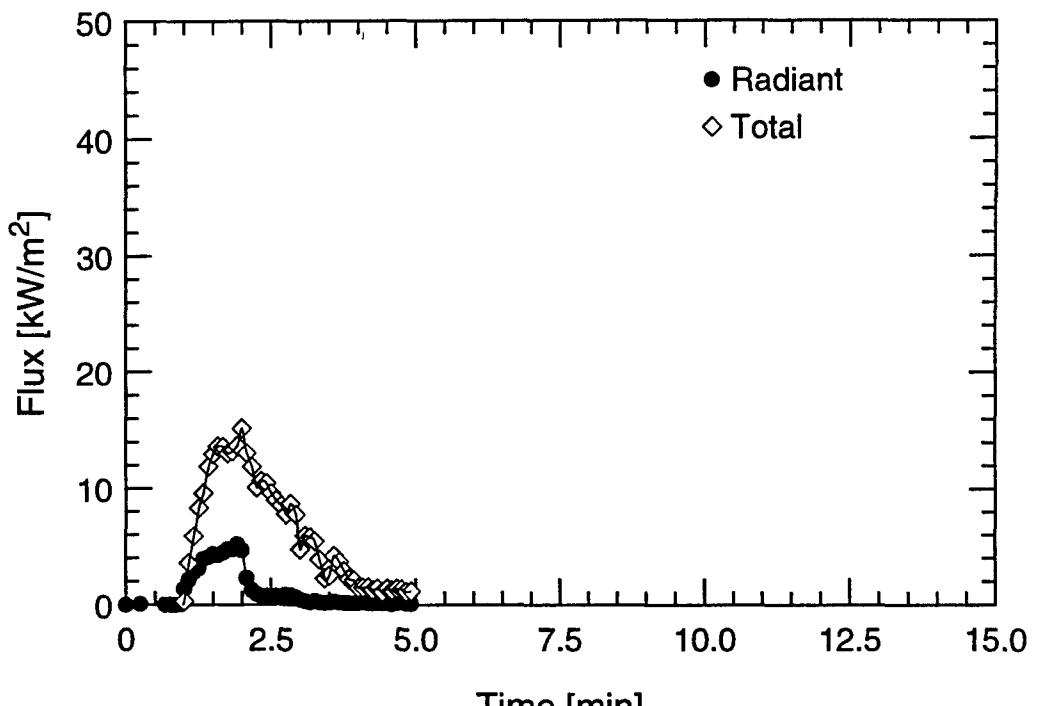


Forward Tree (Low)

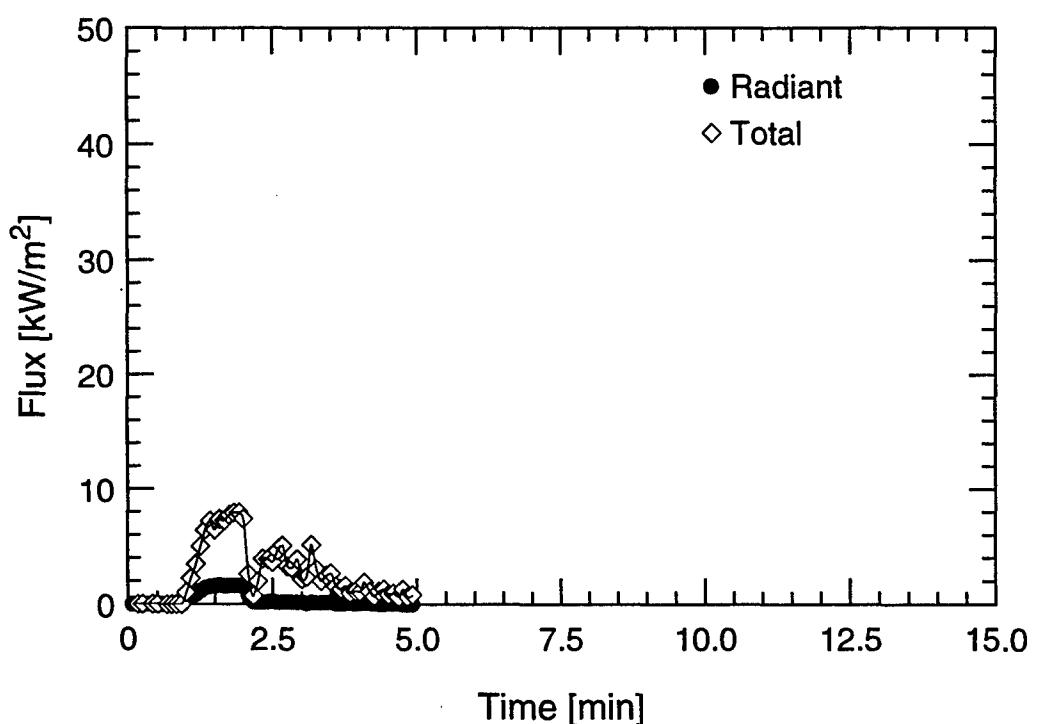


Forward Tree (High)

TEST #12

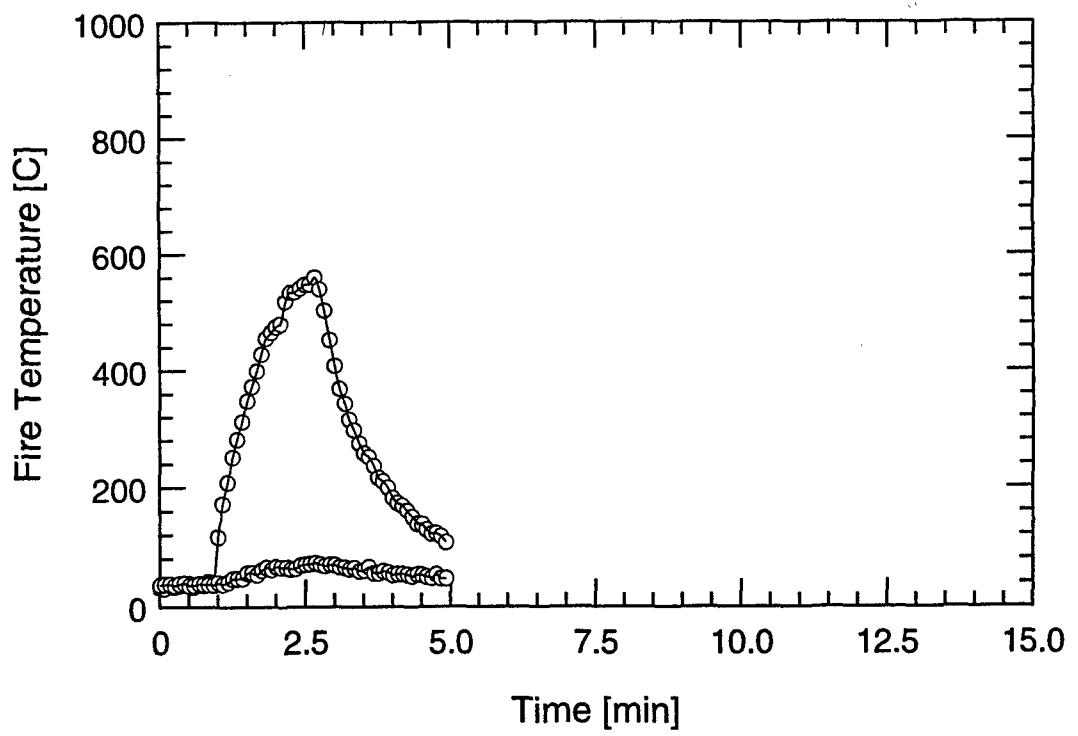


Overhead



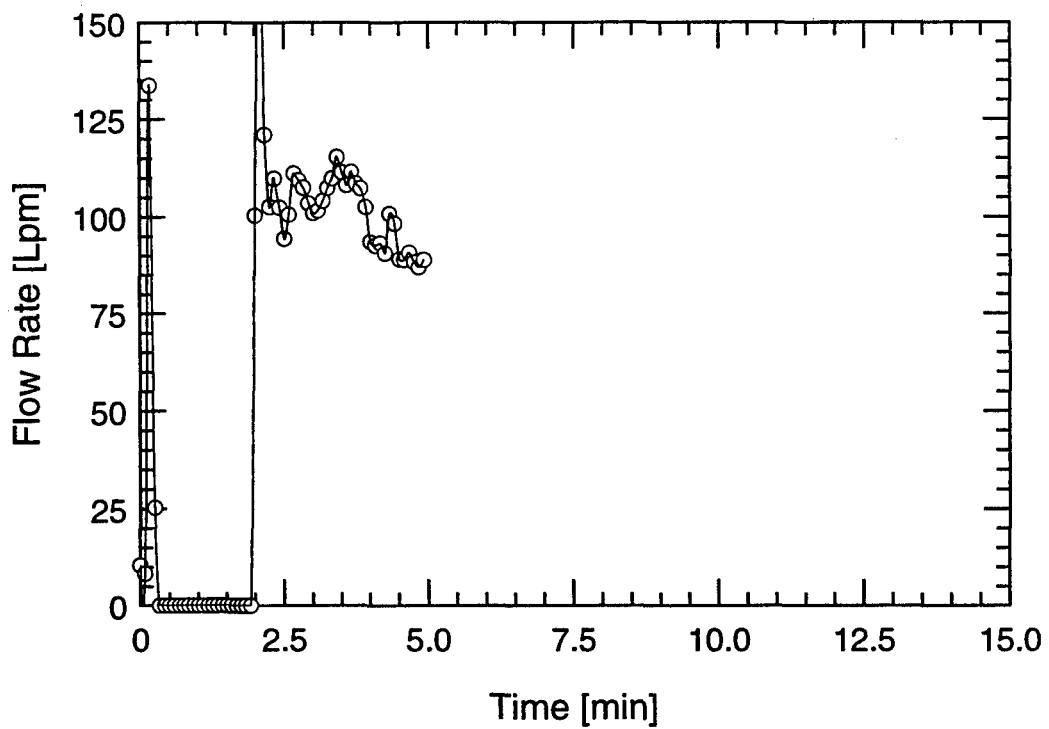
Forward Bulkhead

TEST #12

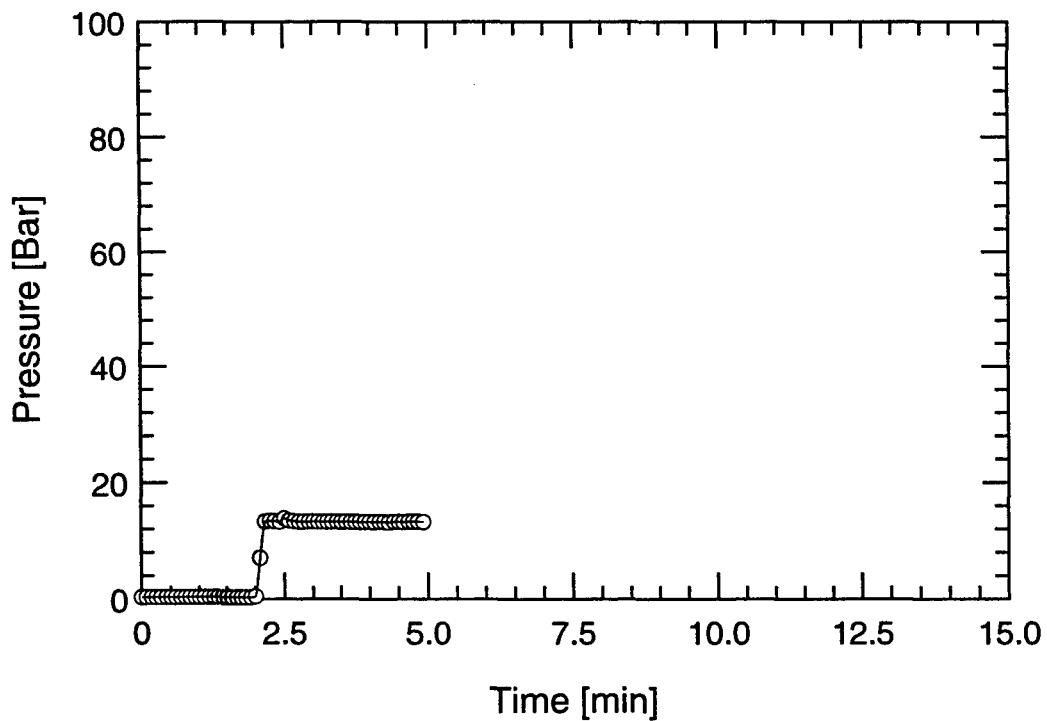


TEST #12

B-74

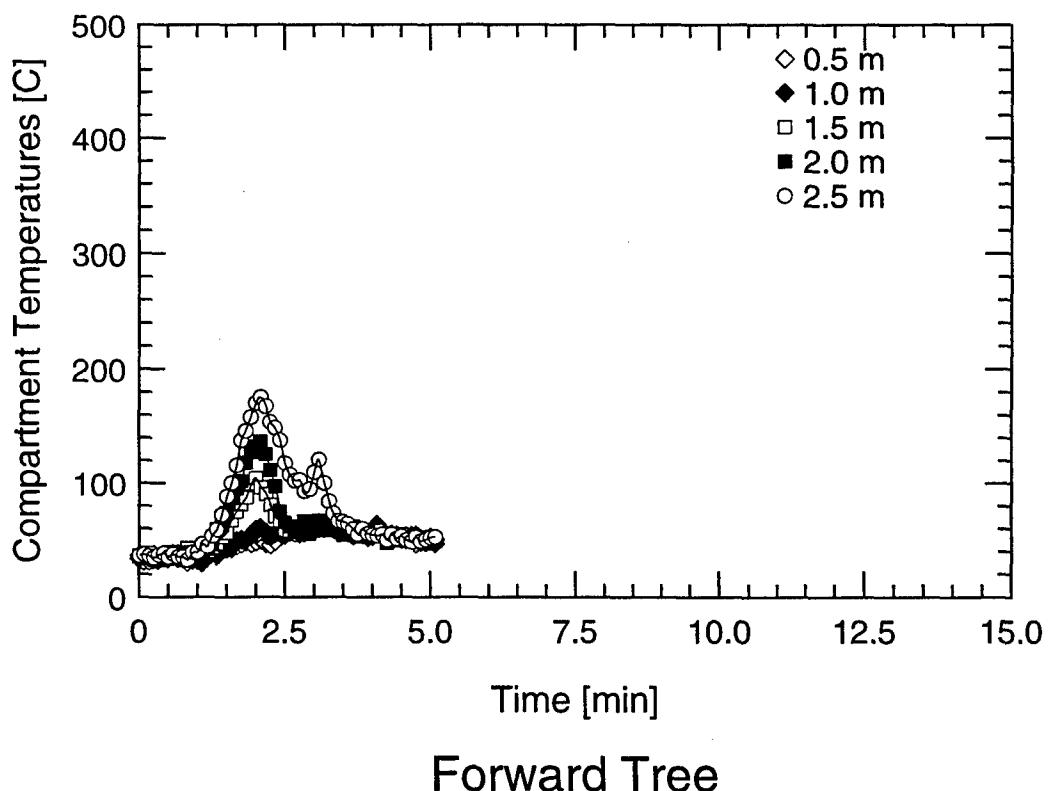
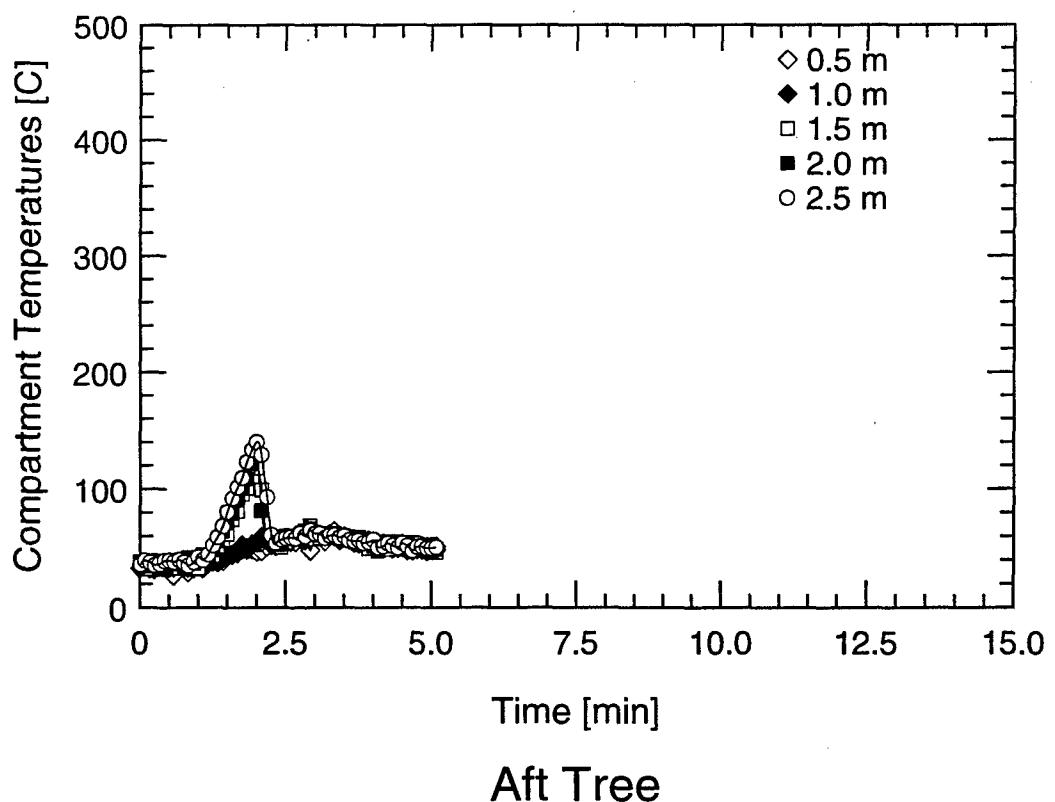


Water Mist System Flow Rate

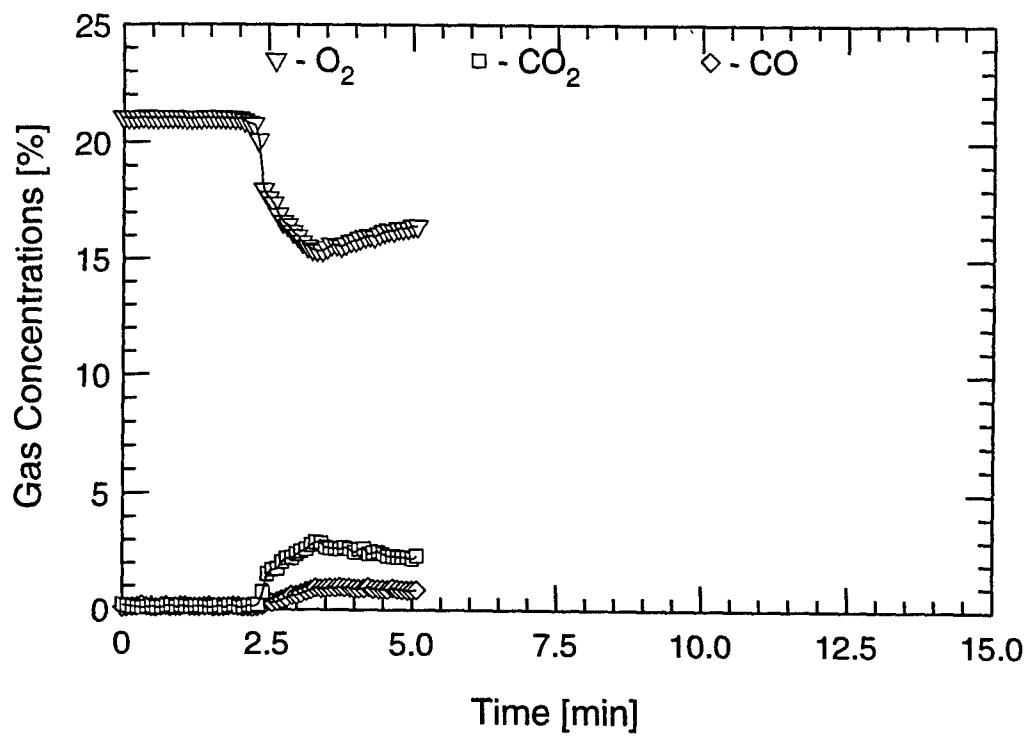


Water Mist System Pressure

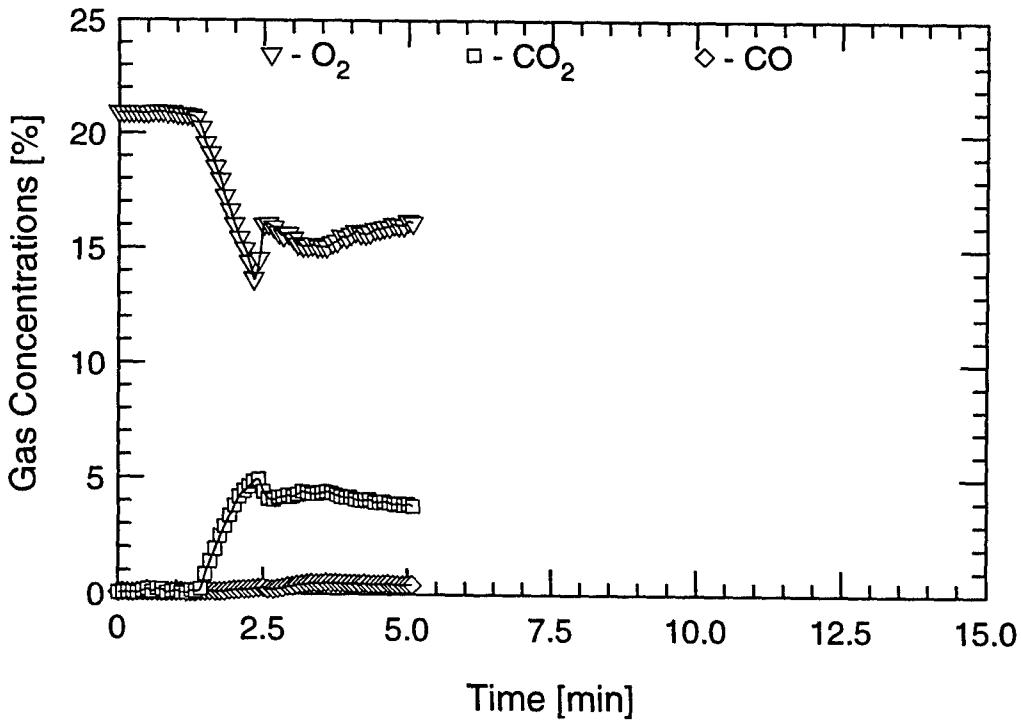
TEST #12



TEST #13

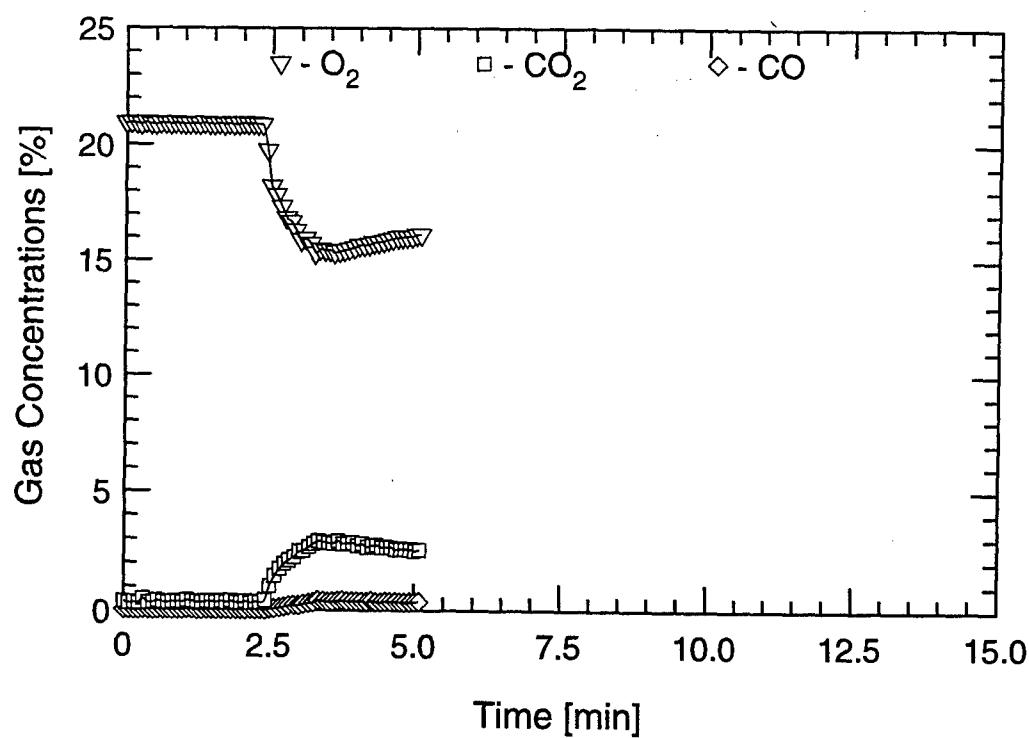


Aft Tree (Low)

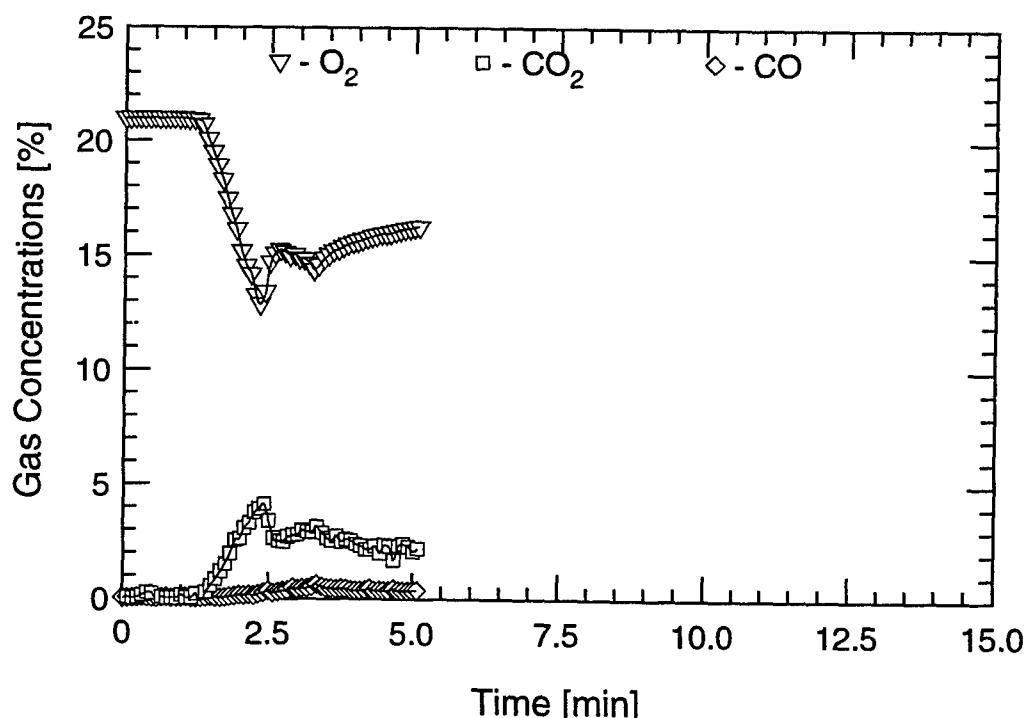


Aft Tree (High)

TEST #13

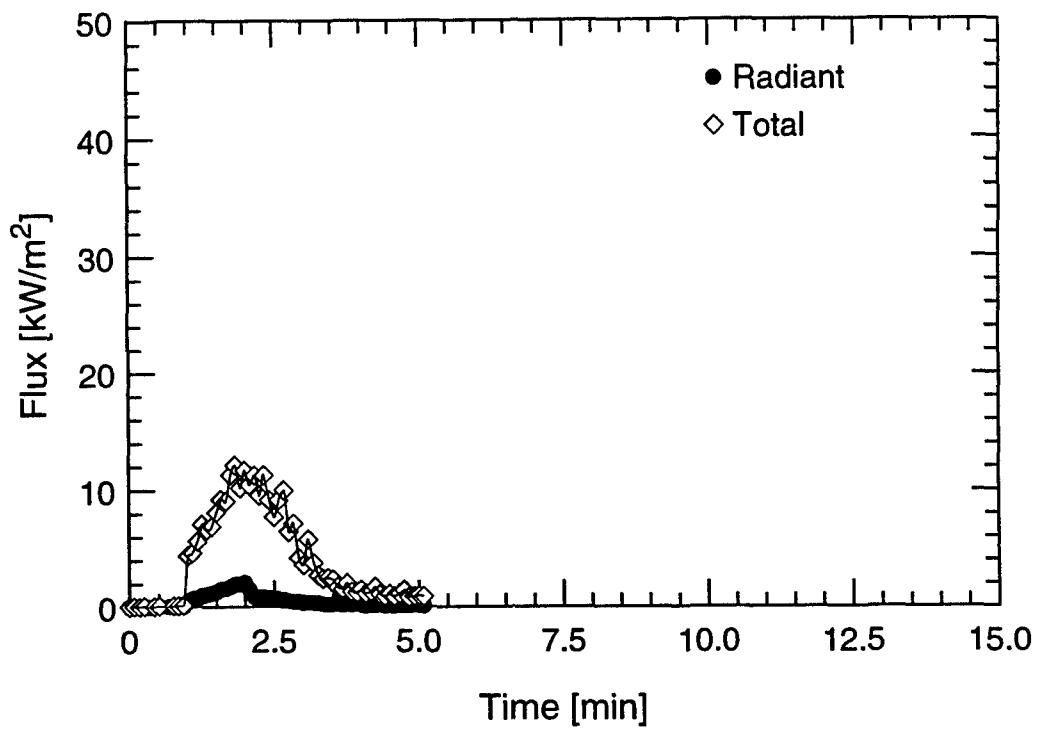


Forward Tree (Low)

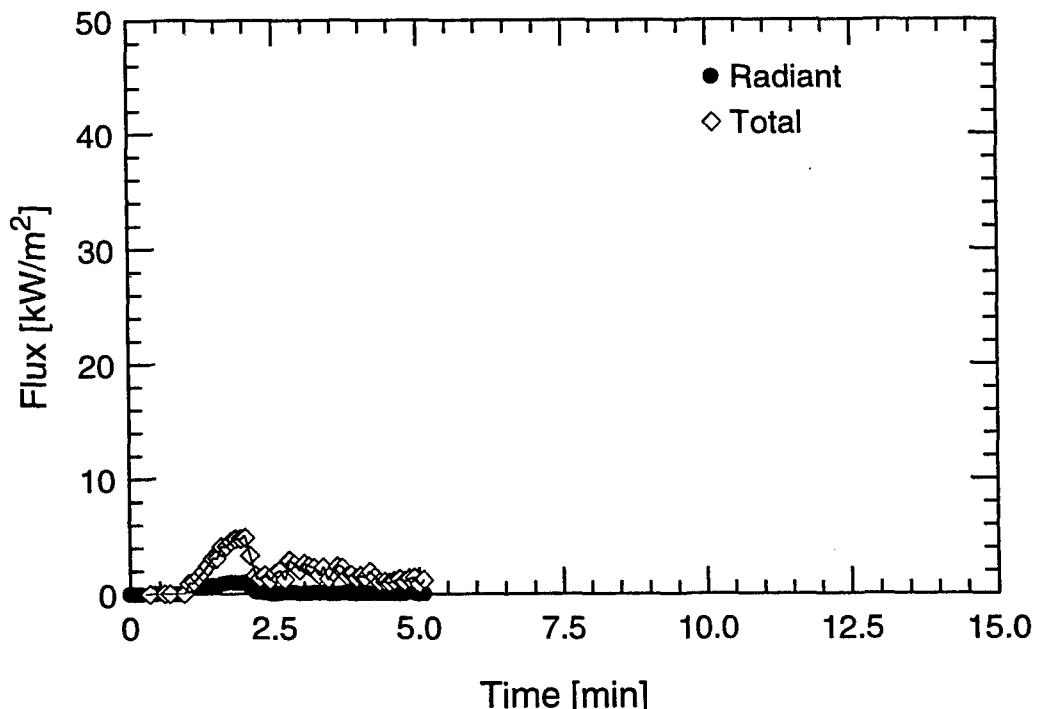


Forward Tree (High)

TEST #13

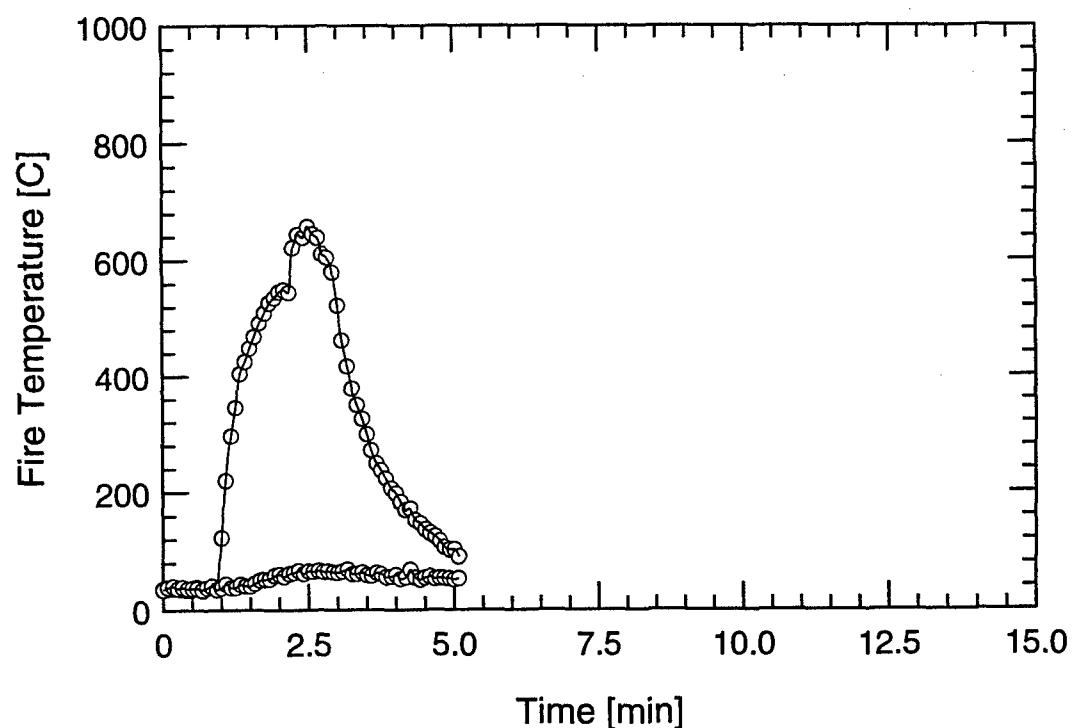


Overhead



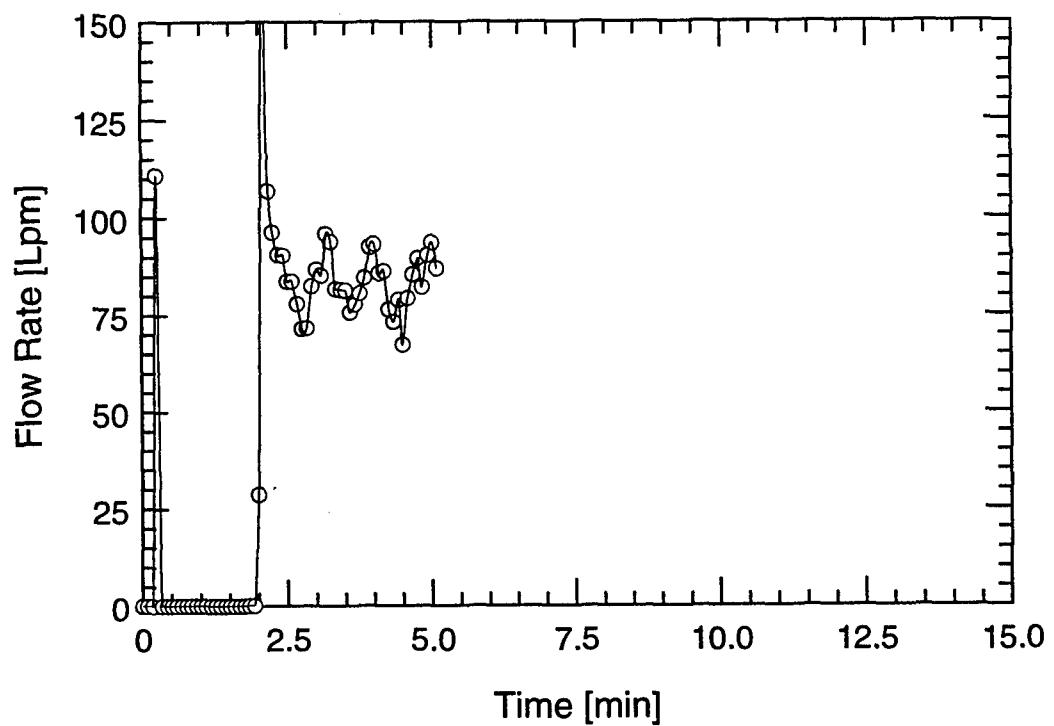
Forward Bulkhead

TEST #13

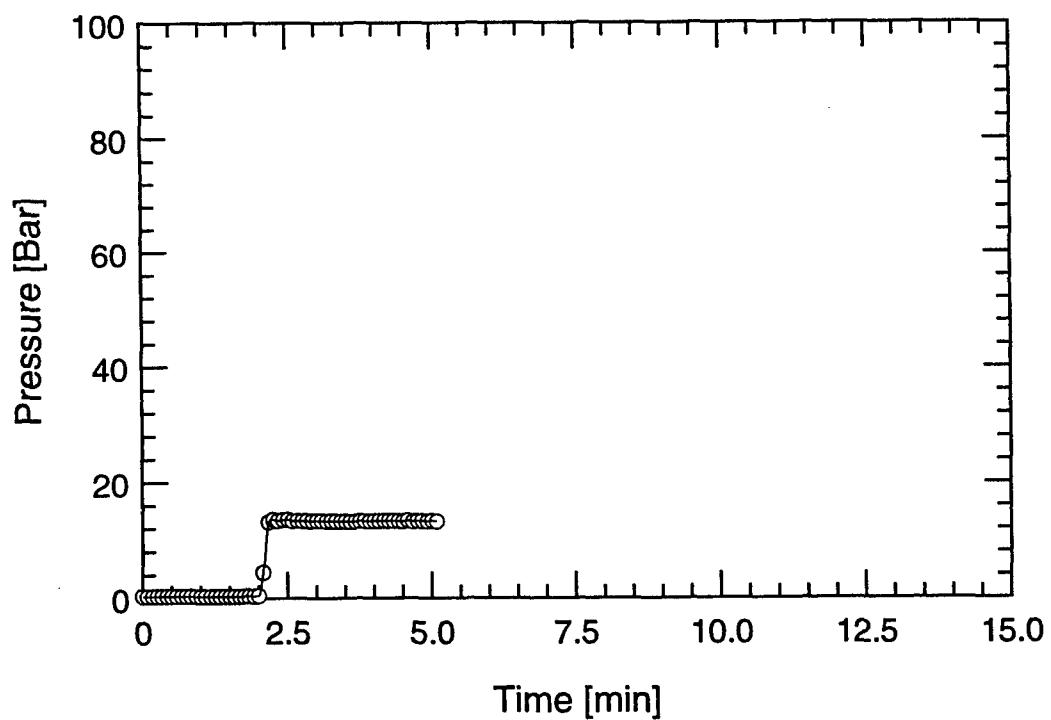


TEST #13

B-80

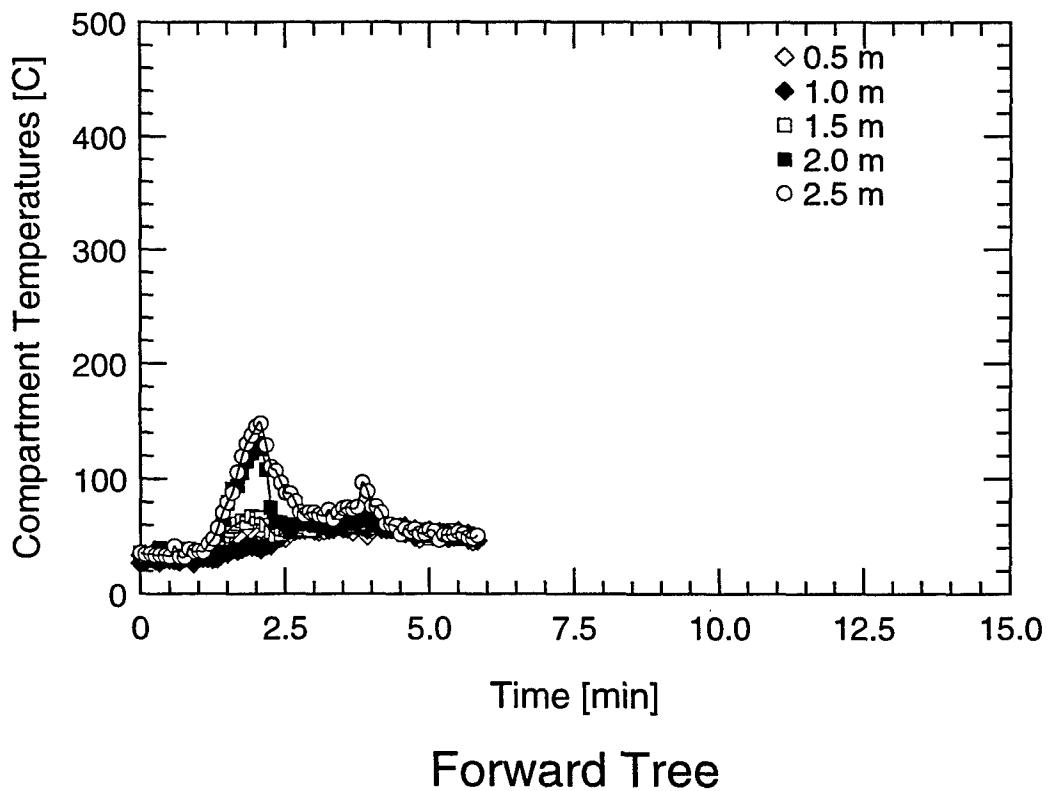
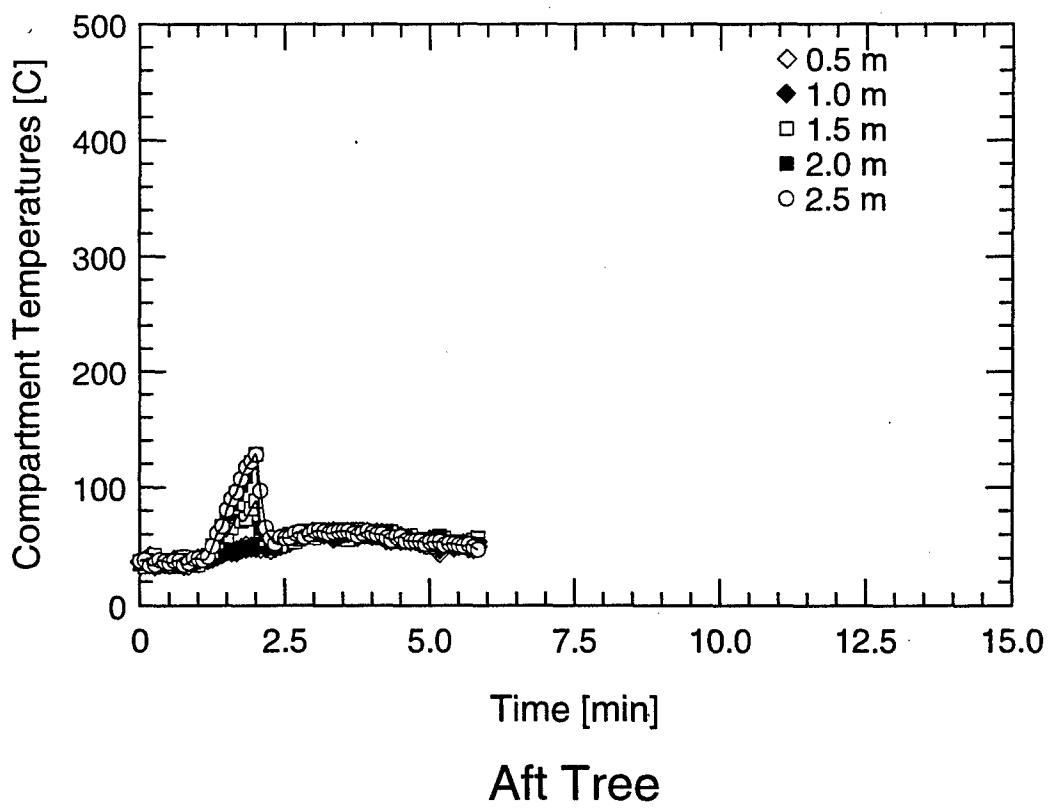


Water Mist System Flow Rate

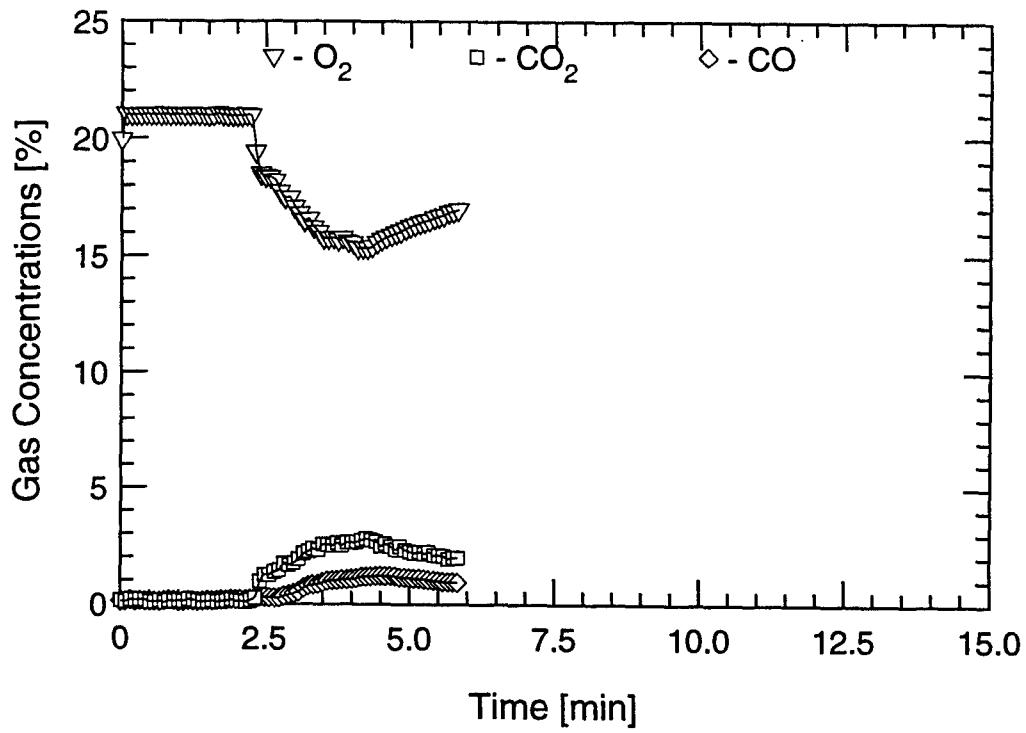


Water Mist System Pressure

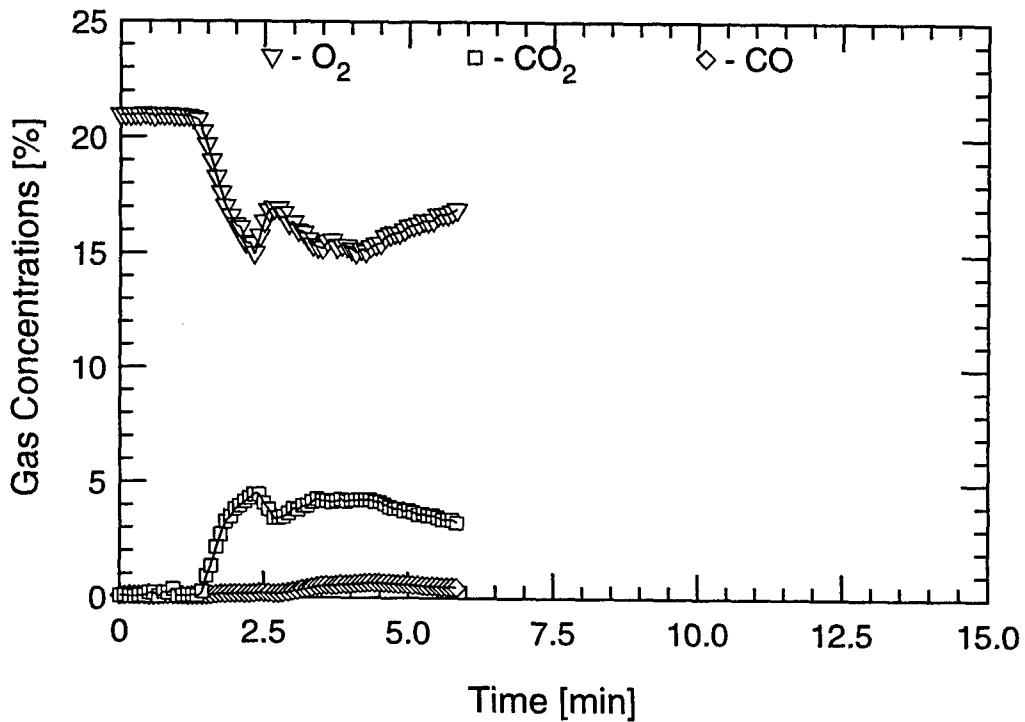
TEST #13



TEST #14

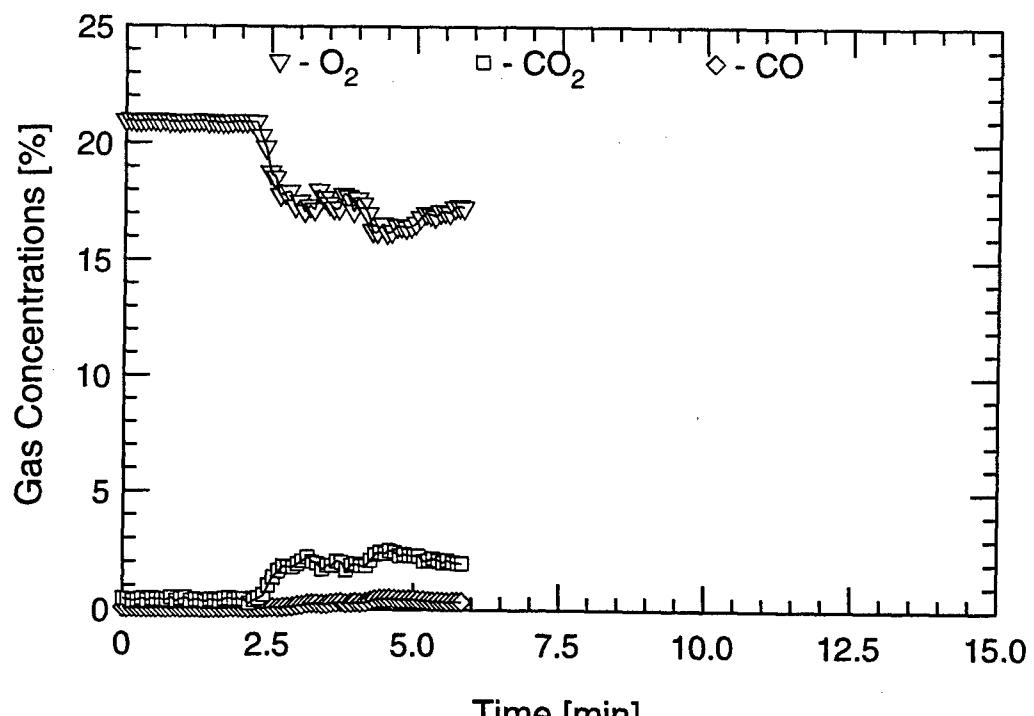


Aft Tree (Low)

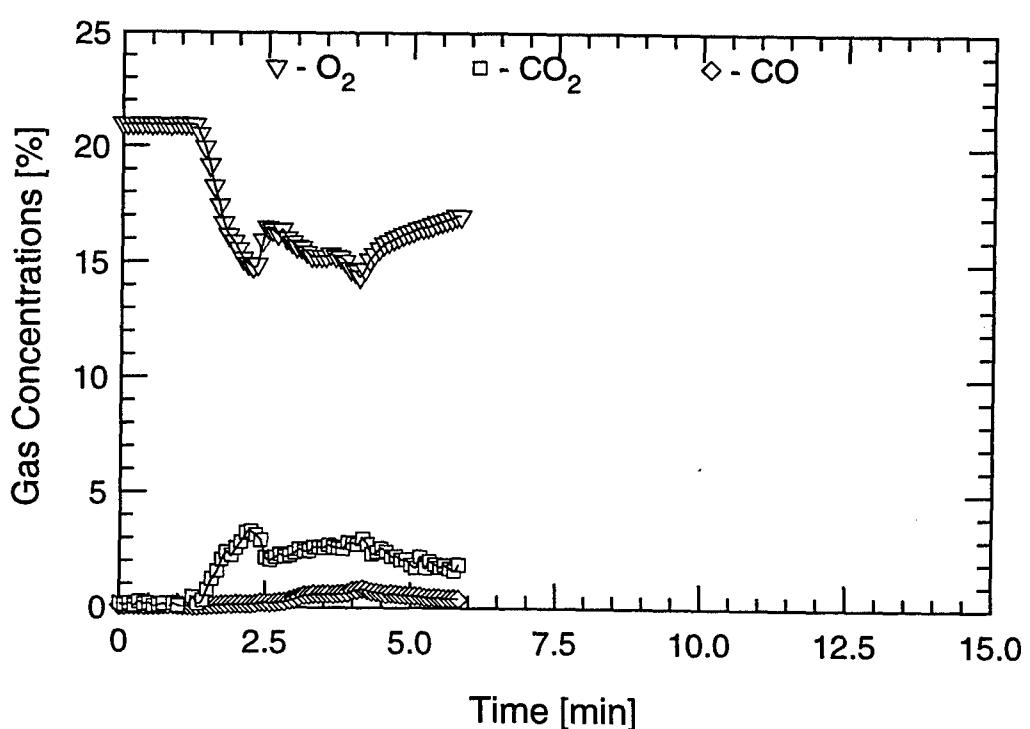


Aft Tree (High)

TEST #14

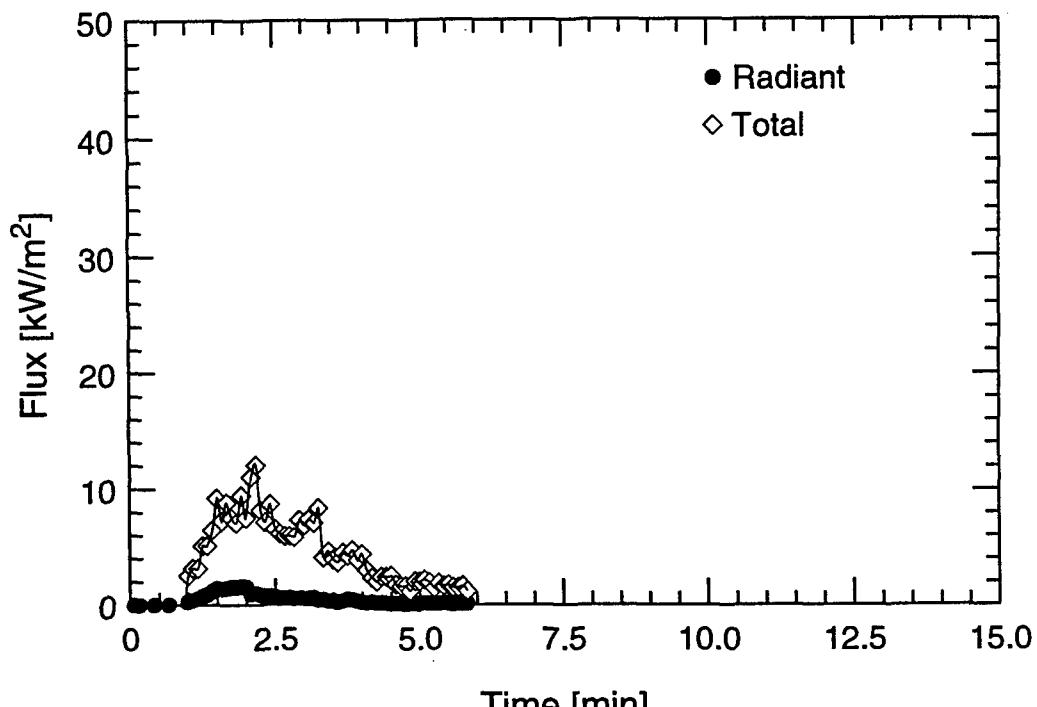


Forward Tree (Low)

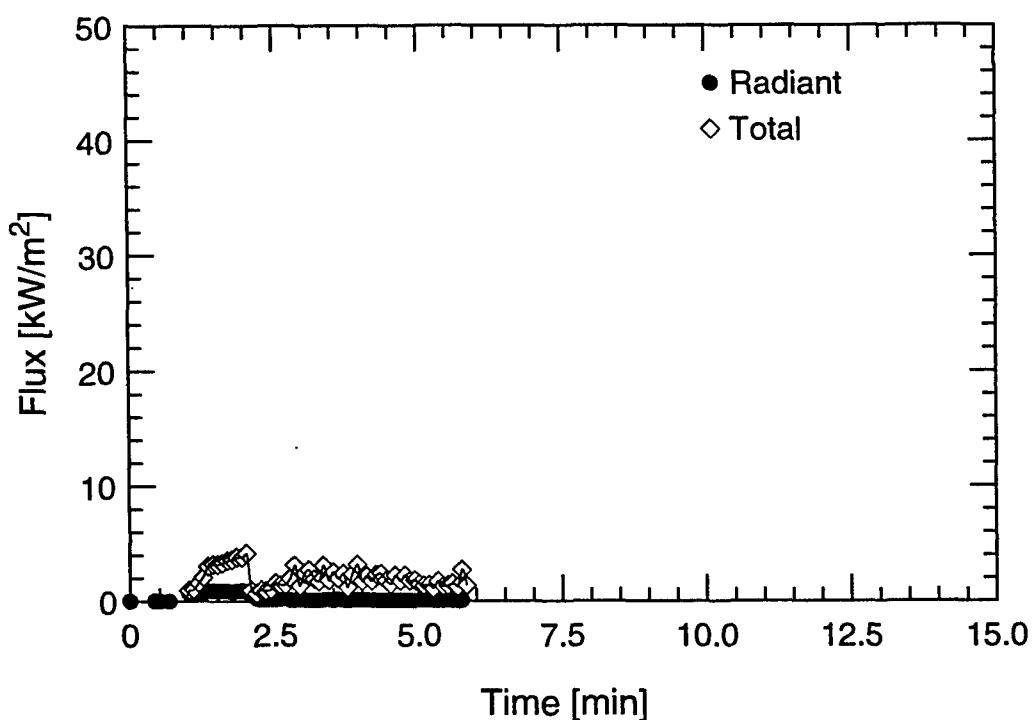


Forward Tree (High)

TEST #14

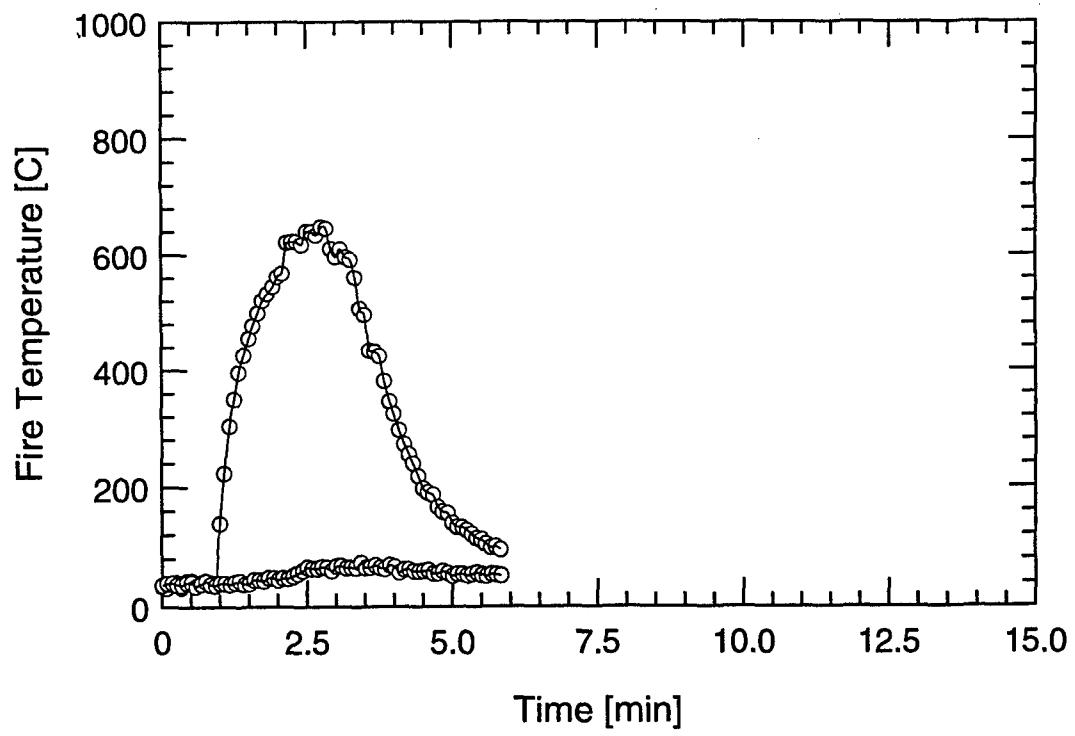


Overhead



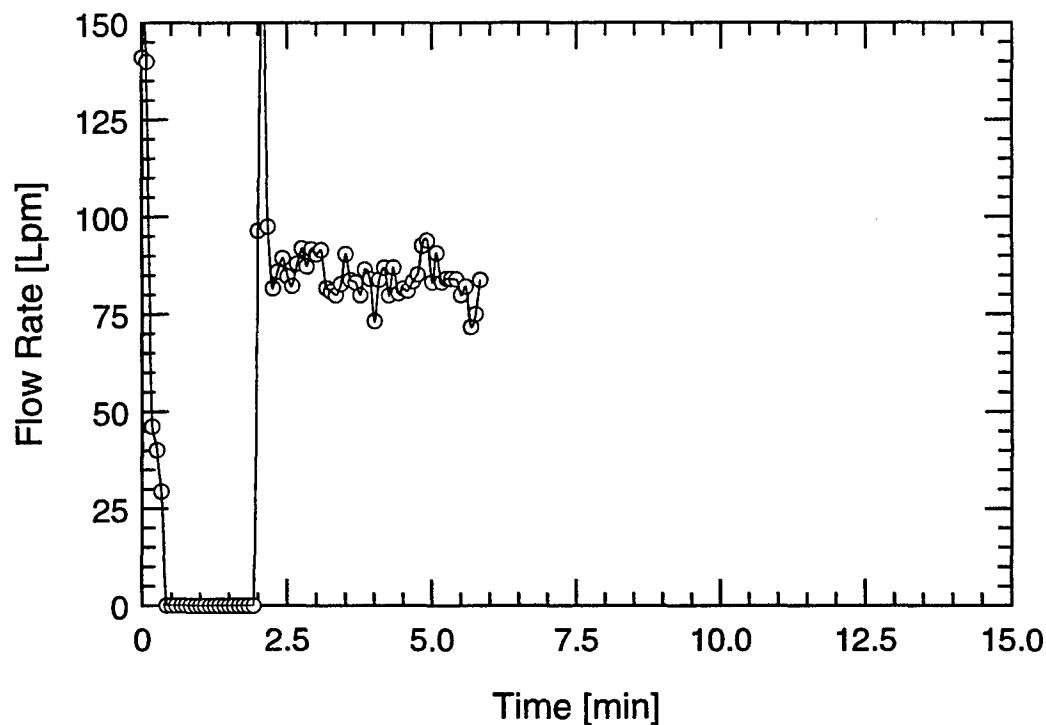
Forward Bulkhead

TEST #14

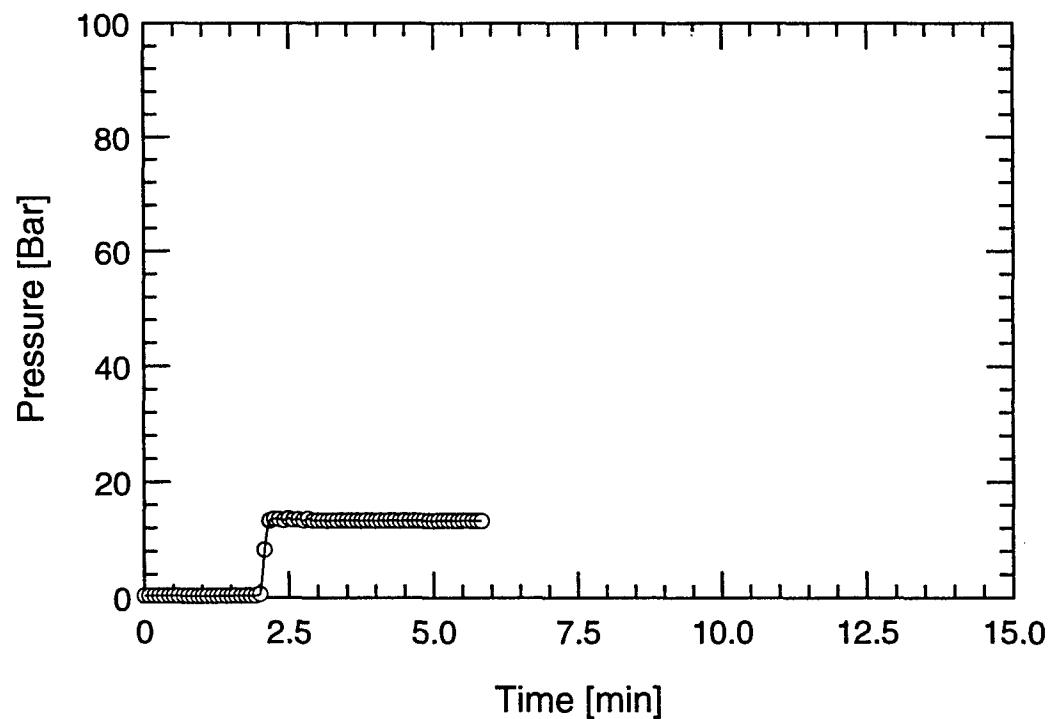


TEST #14

B-86

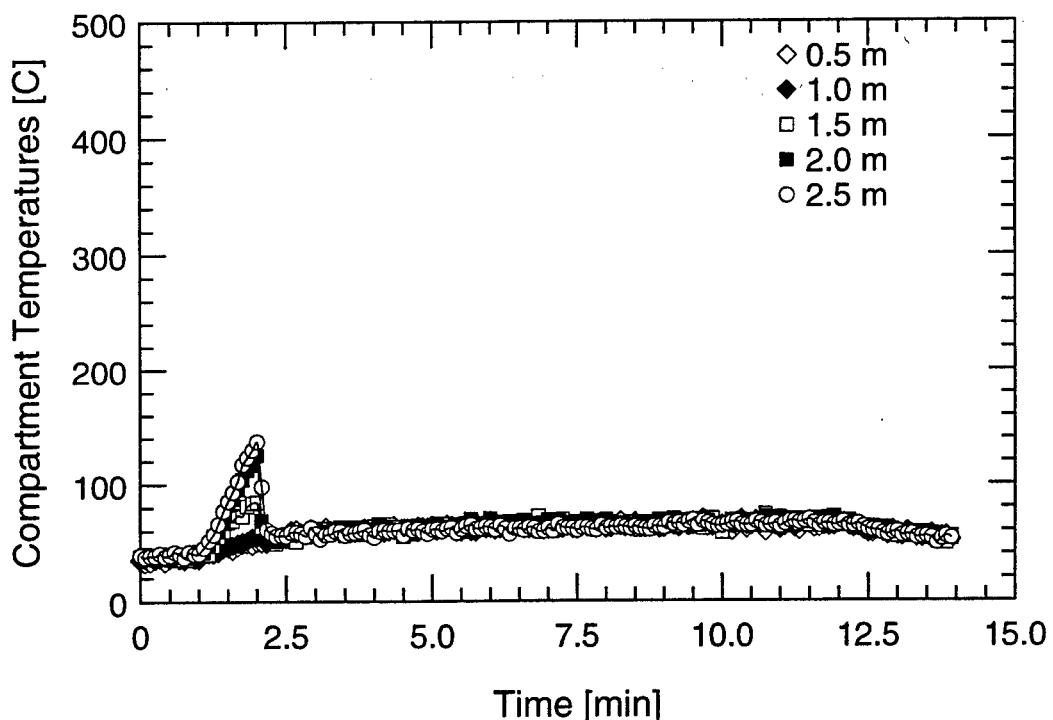


Water Mist System Flow Rate

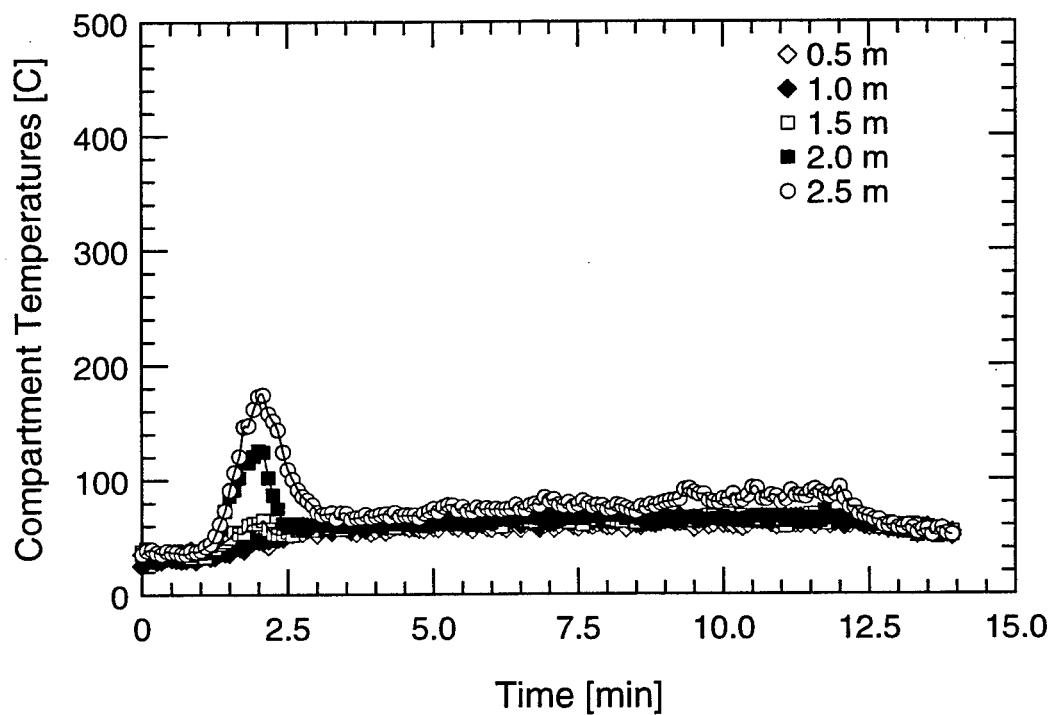


Water Mist System Pressure

TEST #14

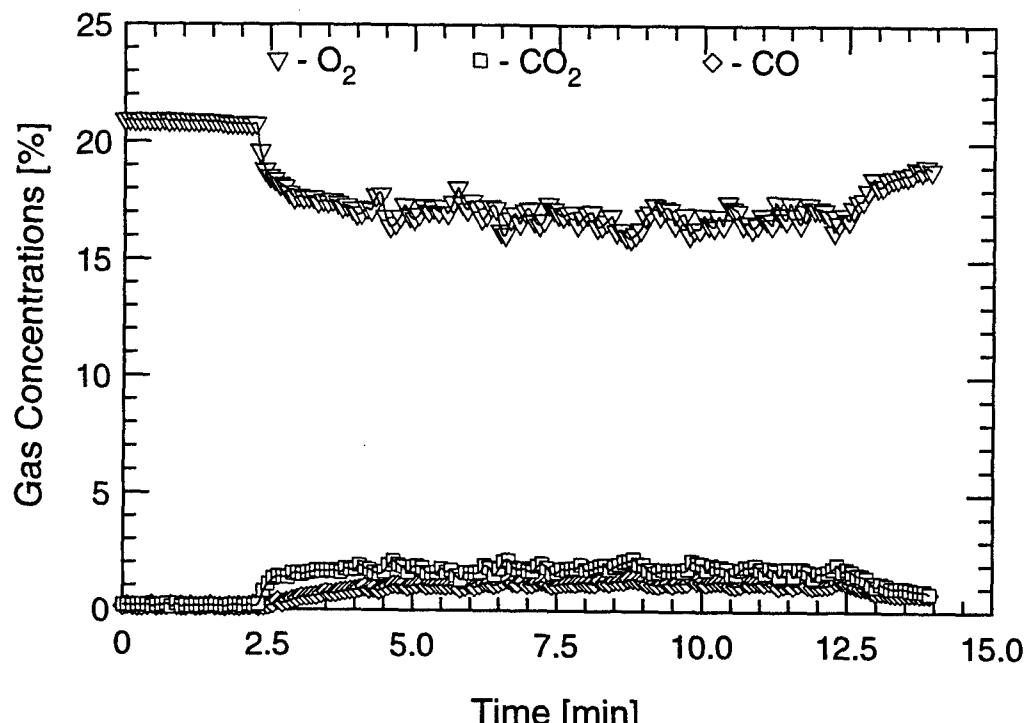


Aft Tree

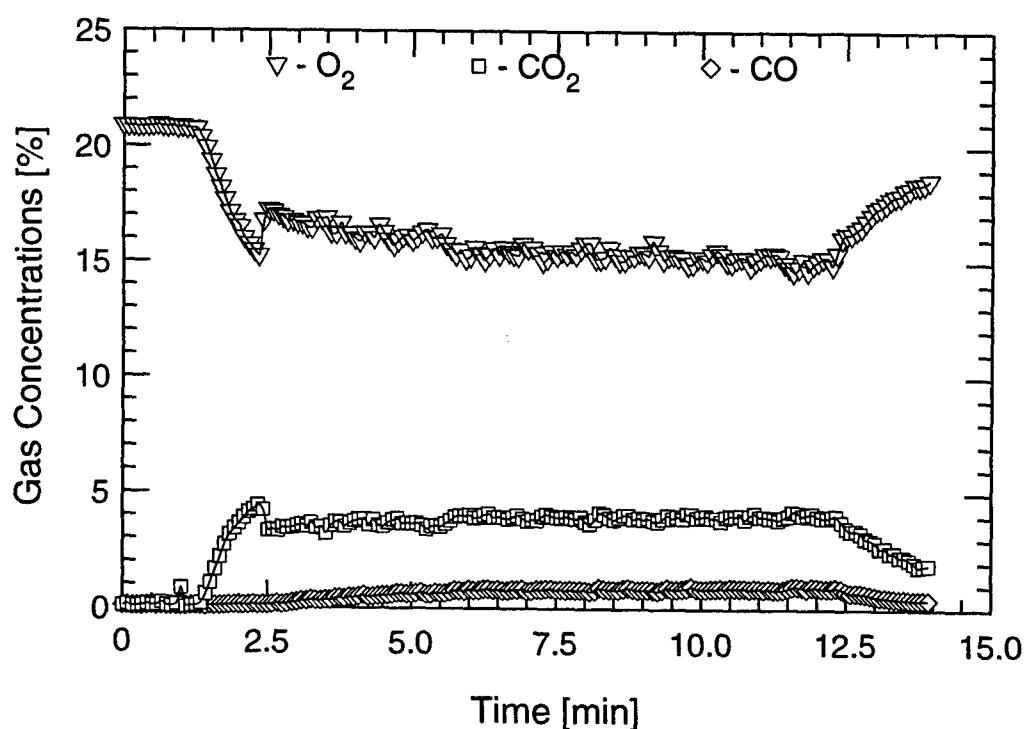


Forward Tree

TEST #15



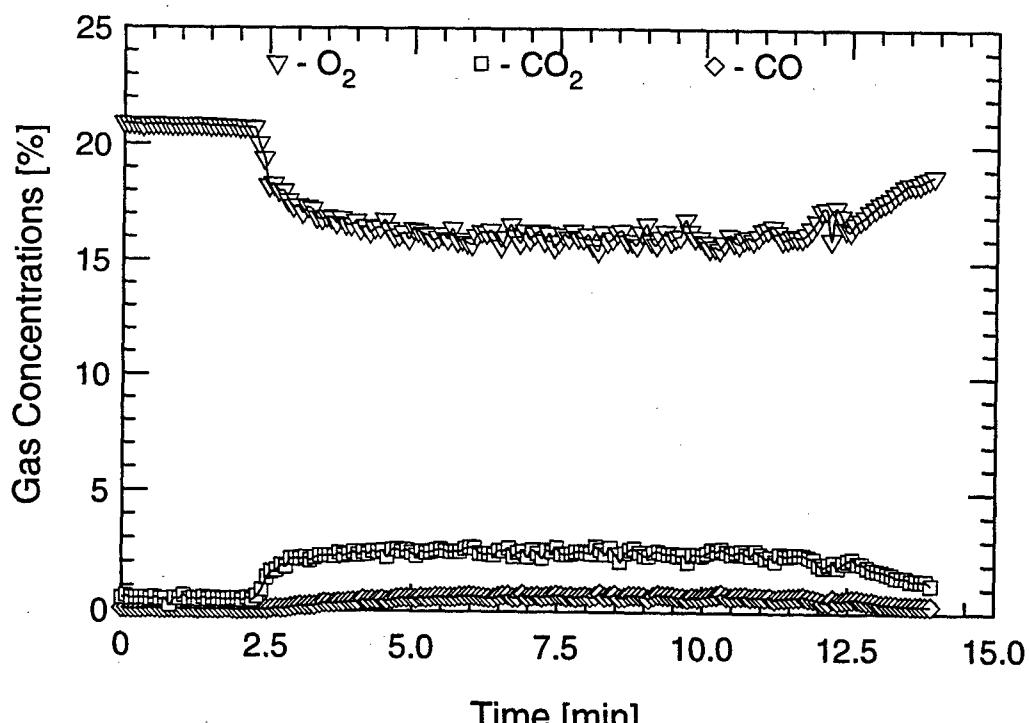
Aft Tree (Low)



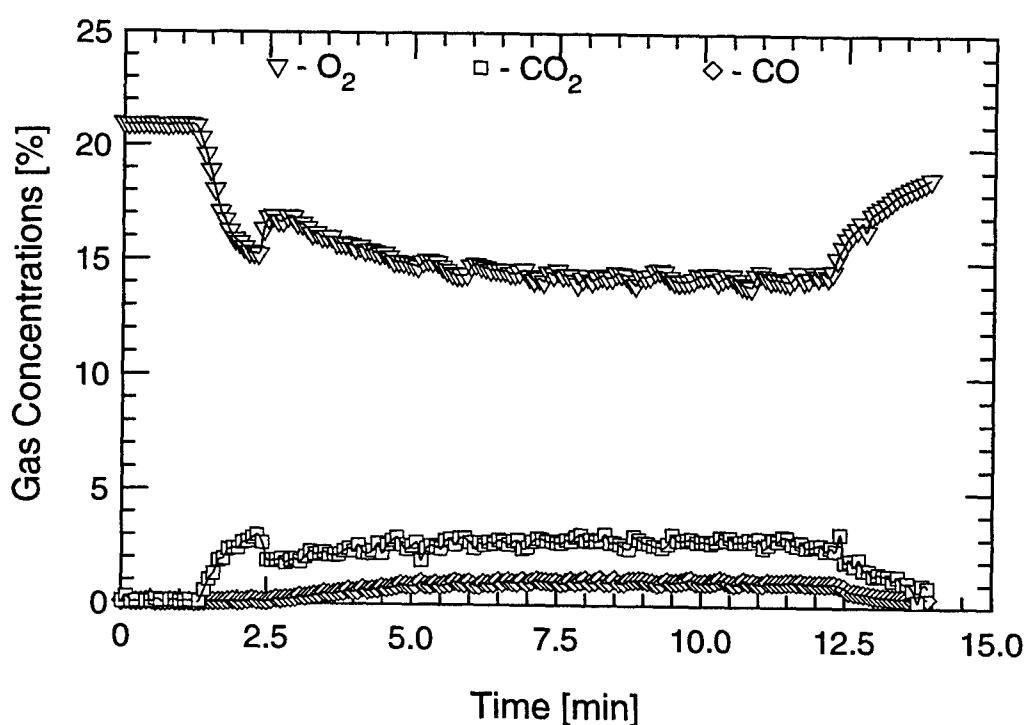
Aft Tree (High)

TEST #15

B-89



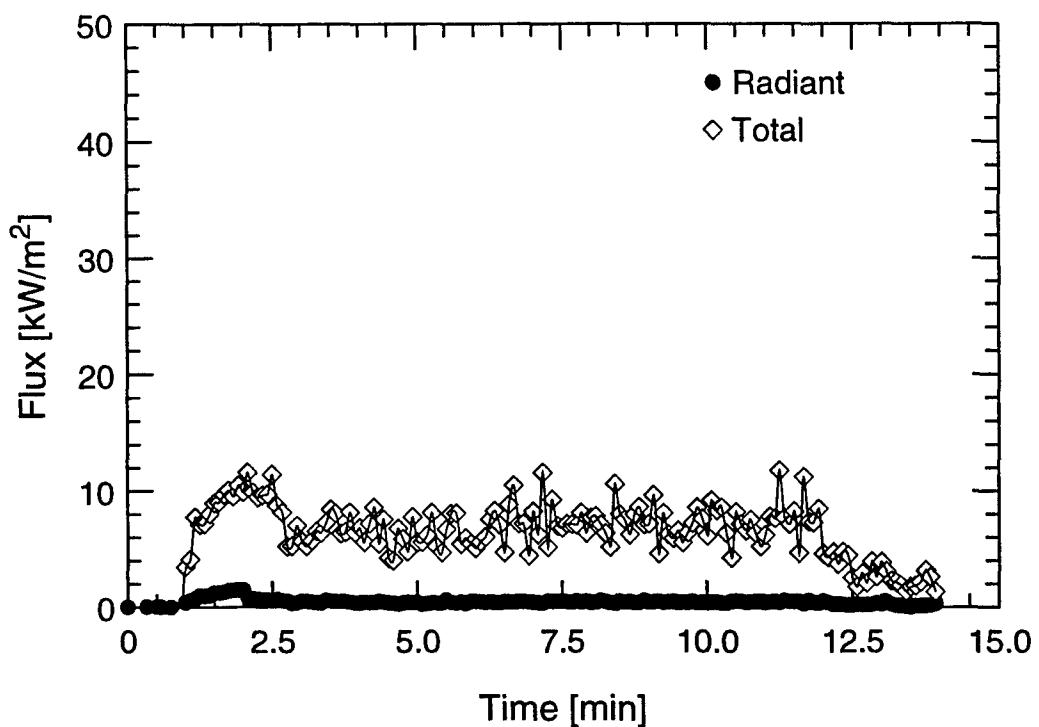
Forward Tree (Low)



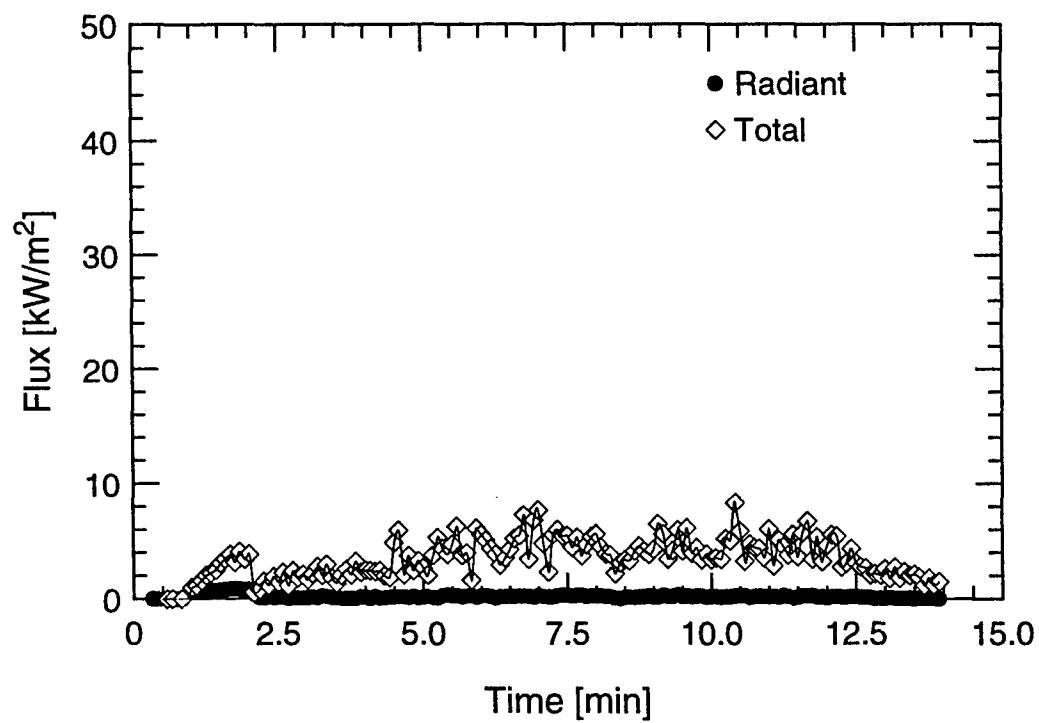
Forward Tree (High)

TEST #15

B-90

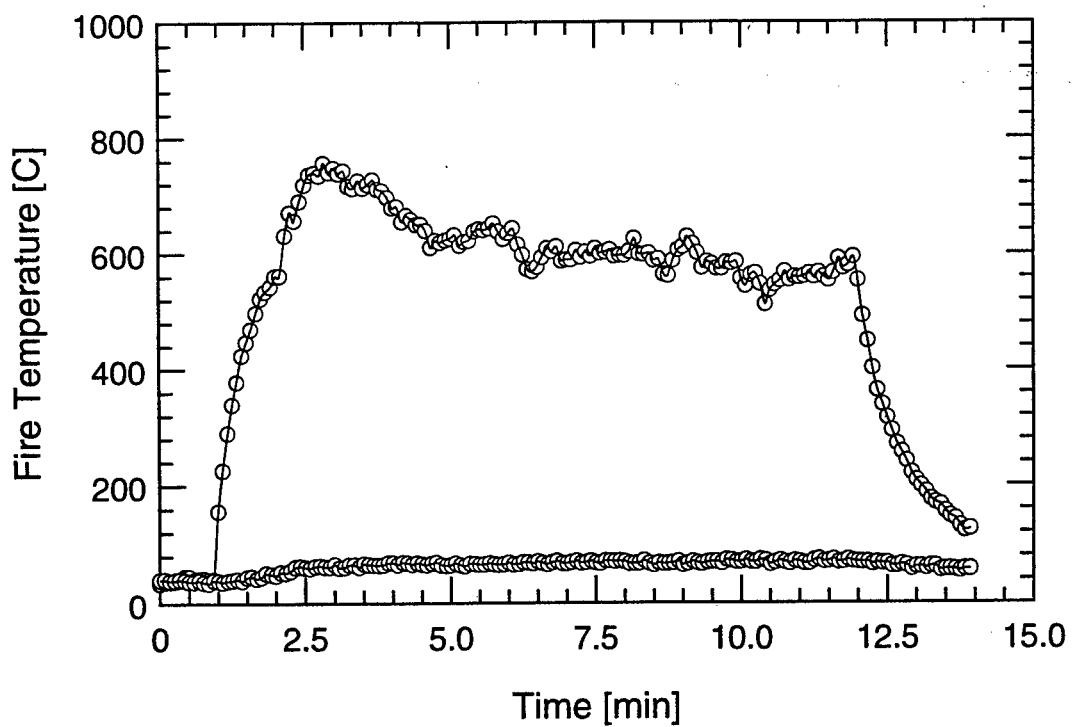


Overhead



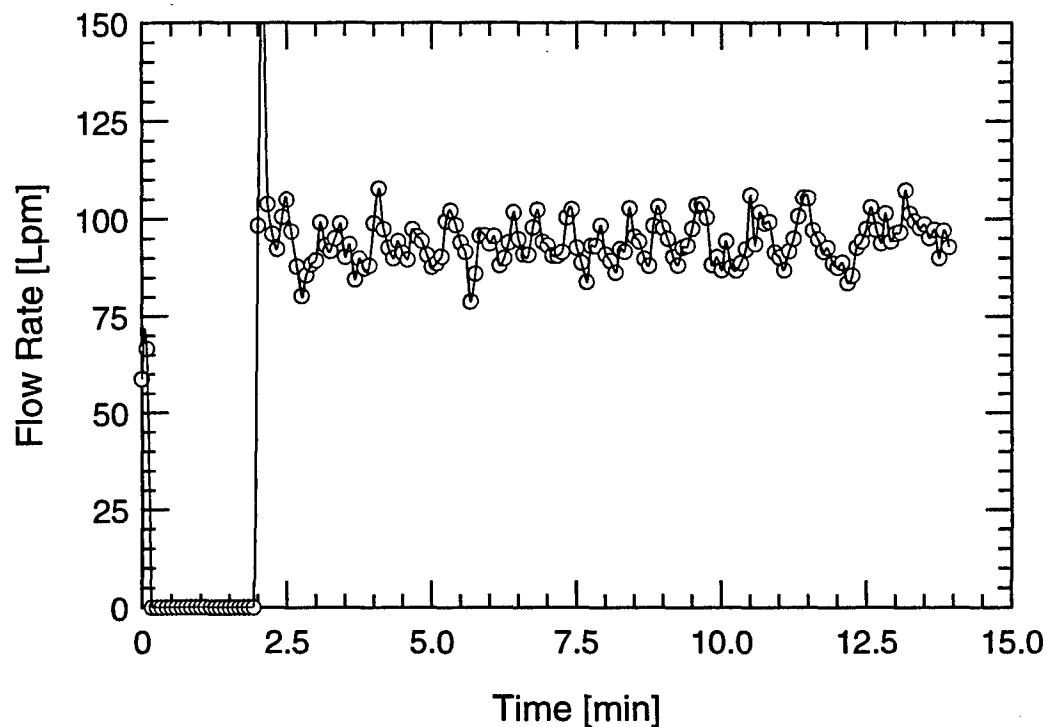
Forward Bulkhead

TEST #15

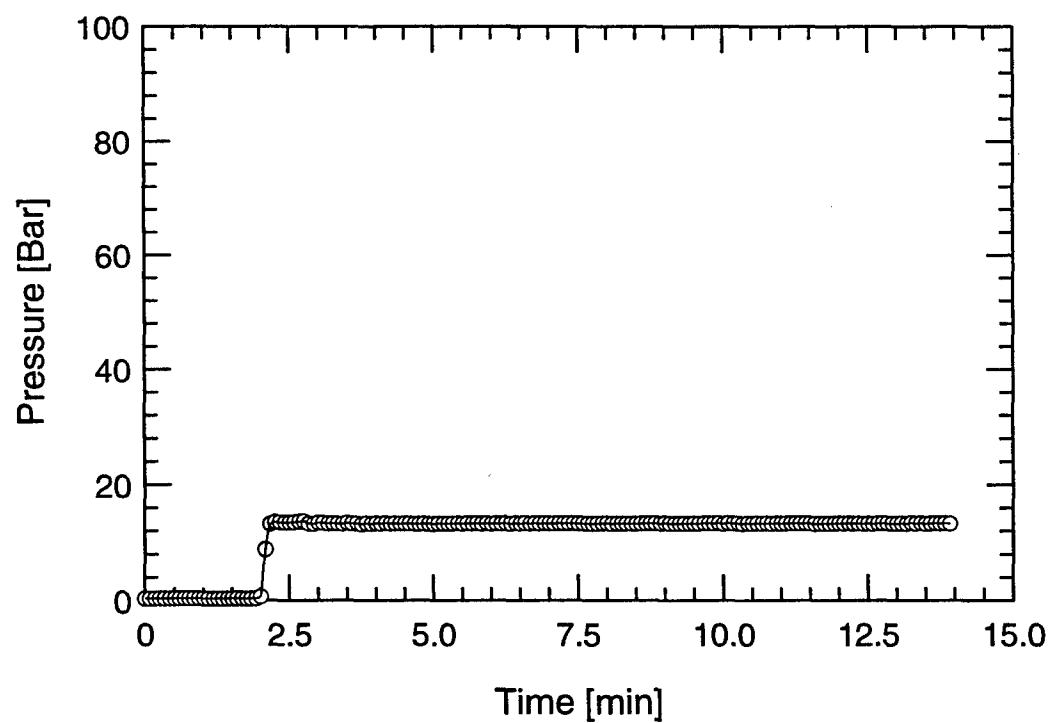


TEST #15

B-92

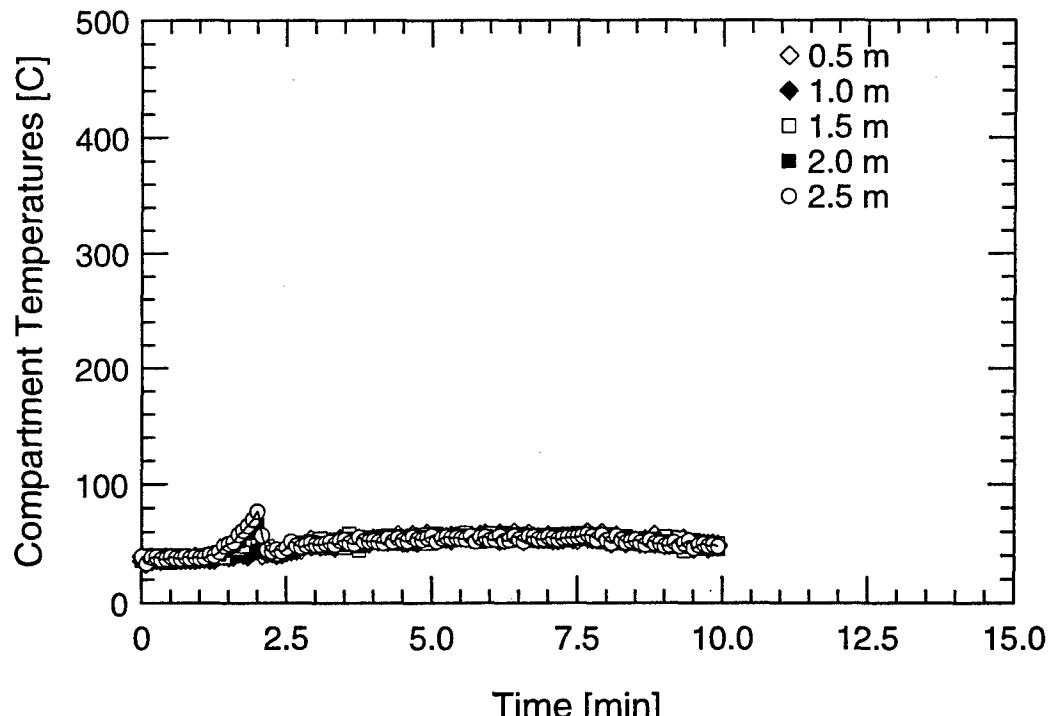


Water Mist System Flow Rate

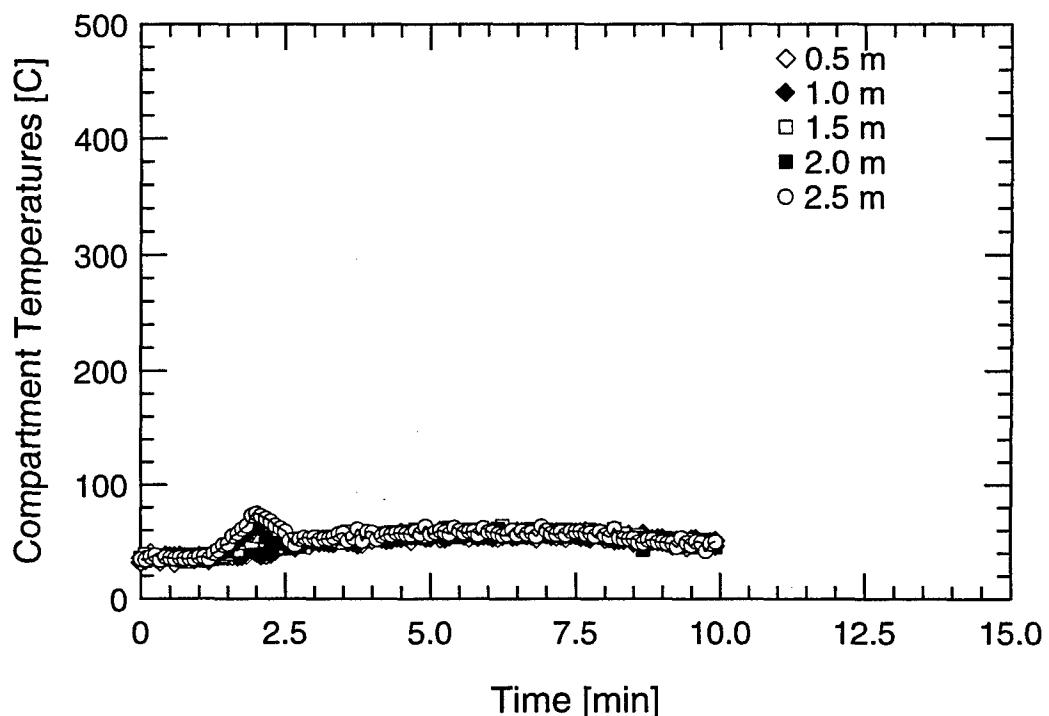


Water Mist System Pressure

TEST #15

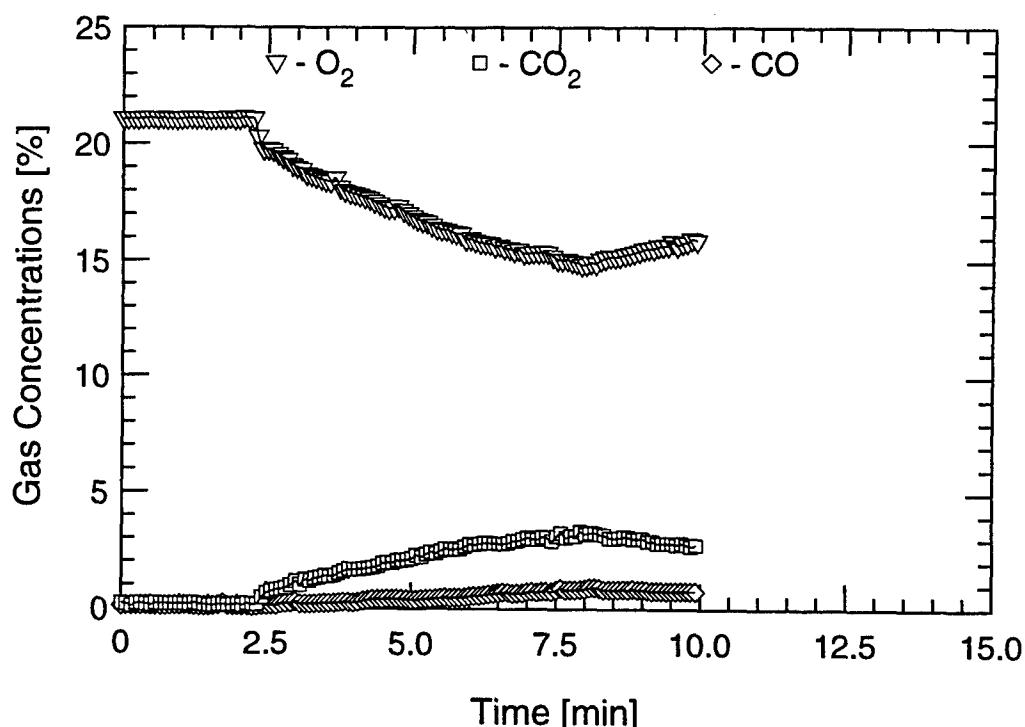


Aft Tree

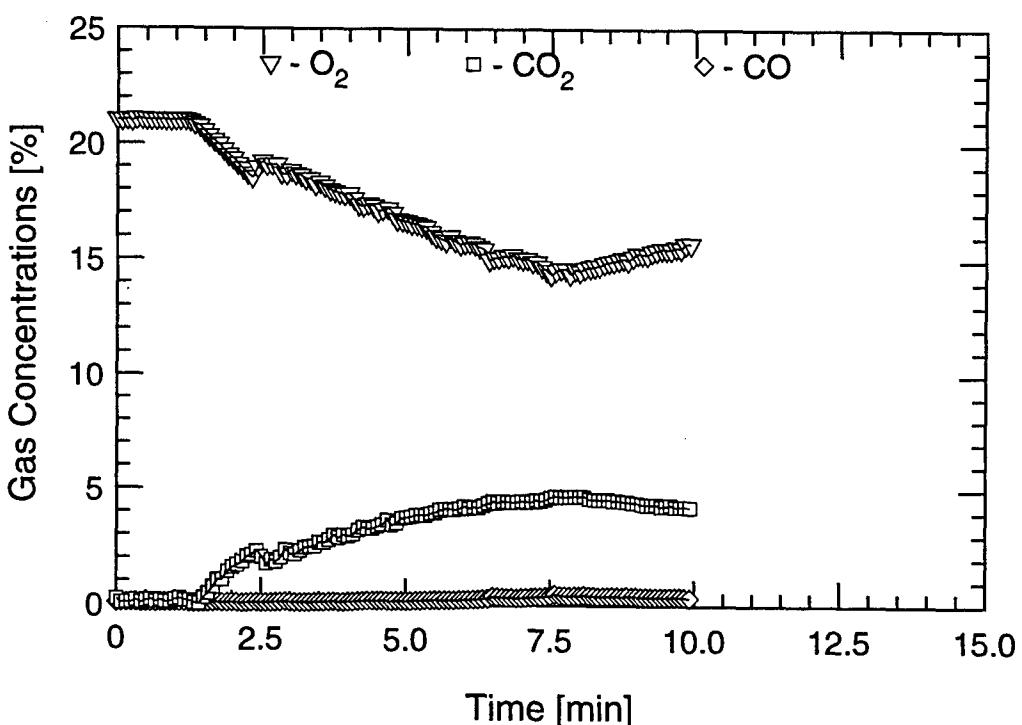


Forward Tree

TEST #16

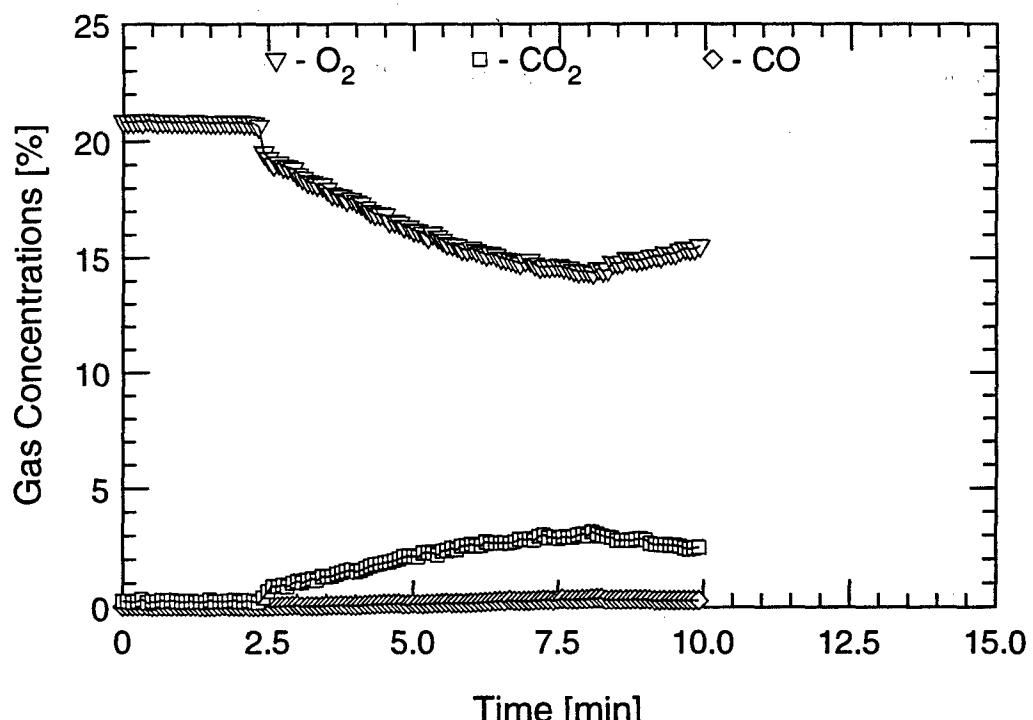


Aft Tree (Low)

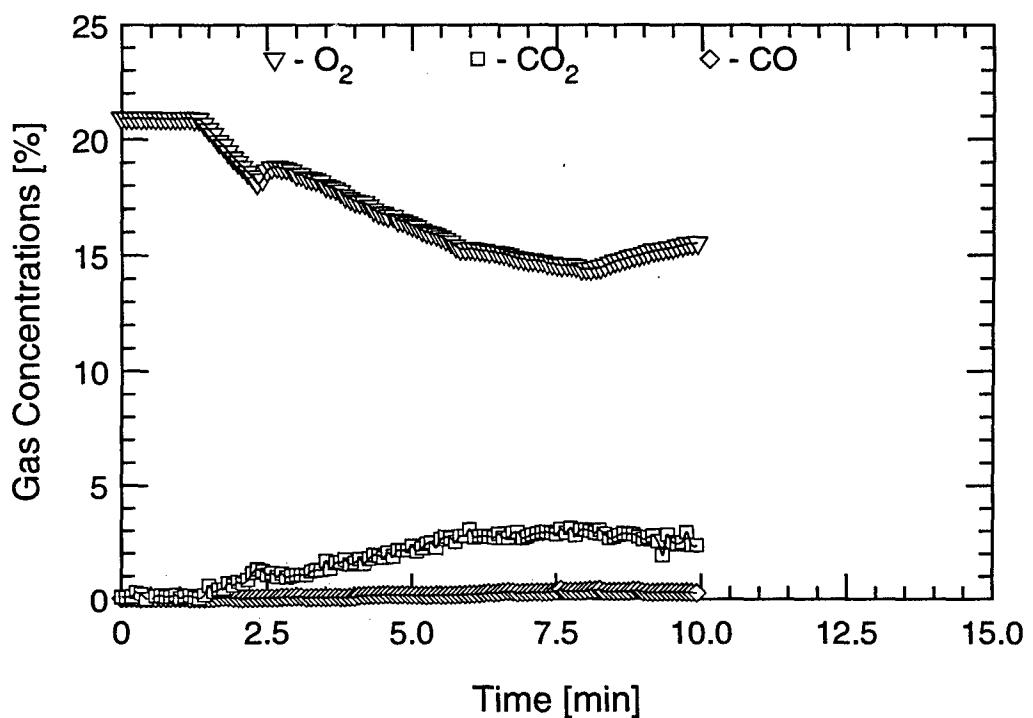


Aft Tree (High)

TEST #16

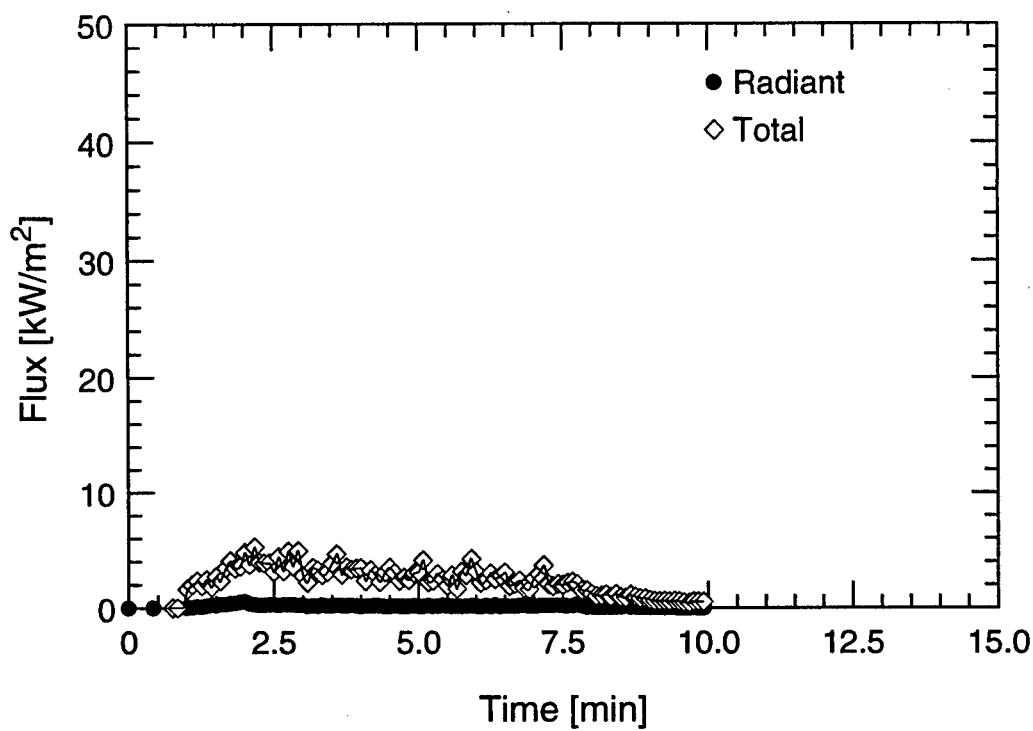


Forward Tree (Low)

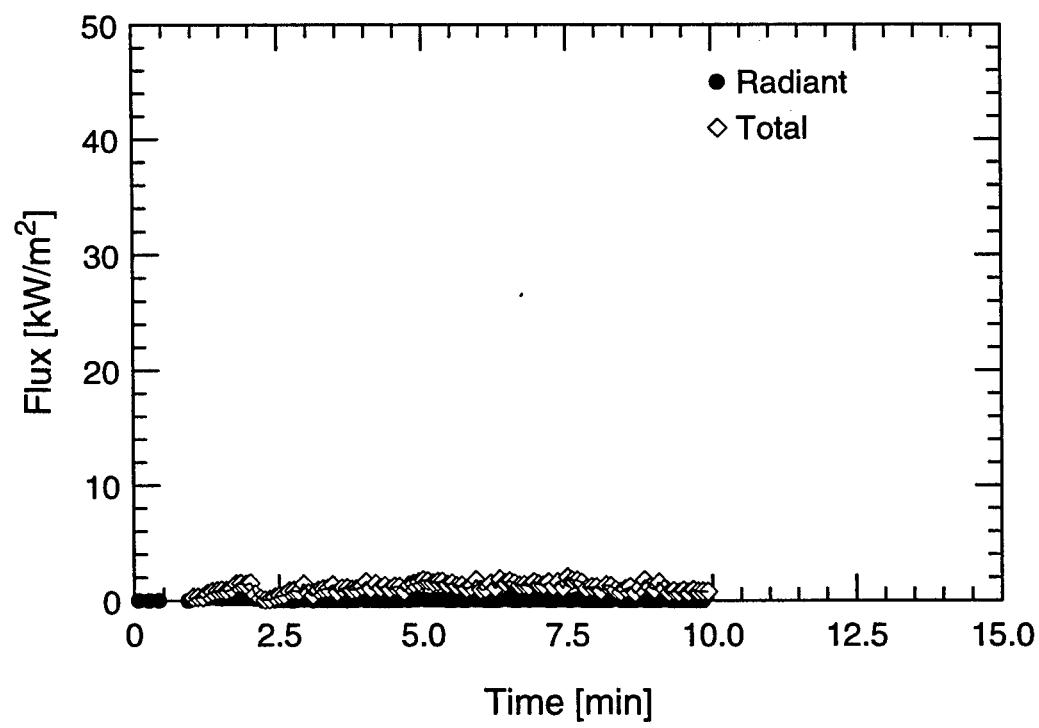


Forward Tree (High)

TEST #16



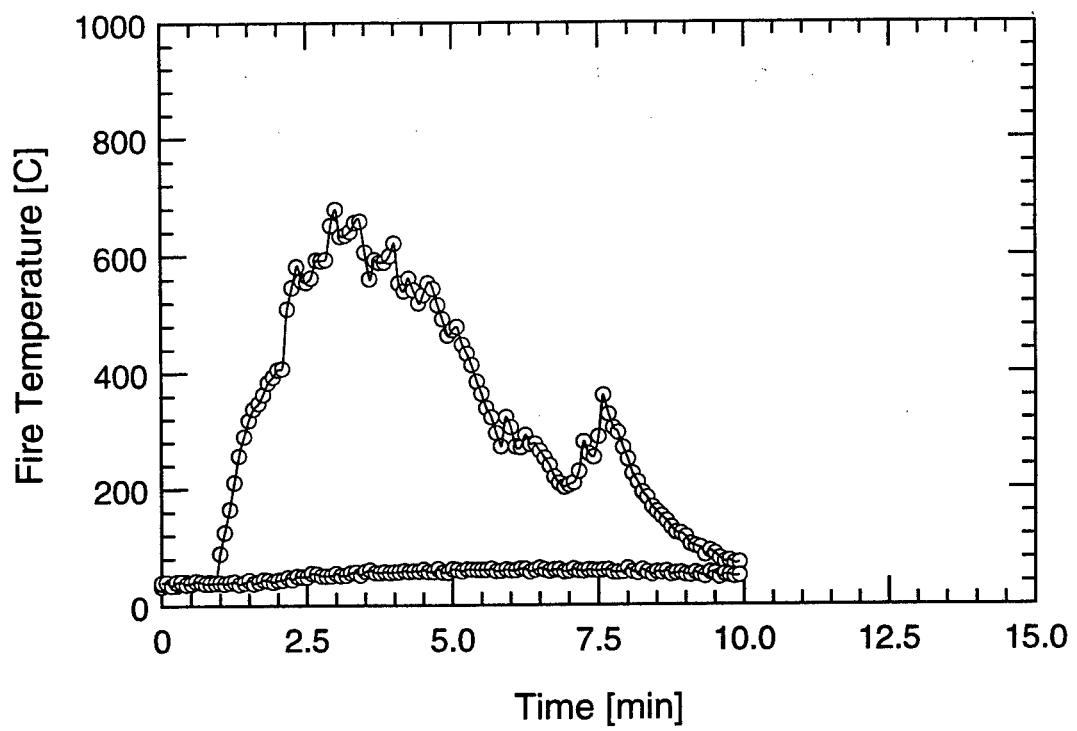
Overhead



Forward Bulkhead

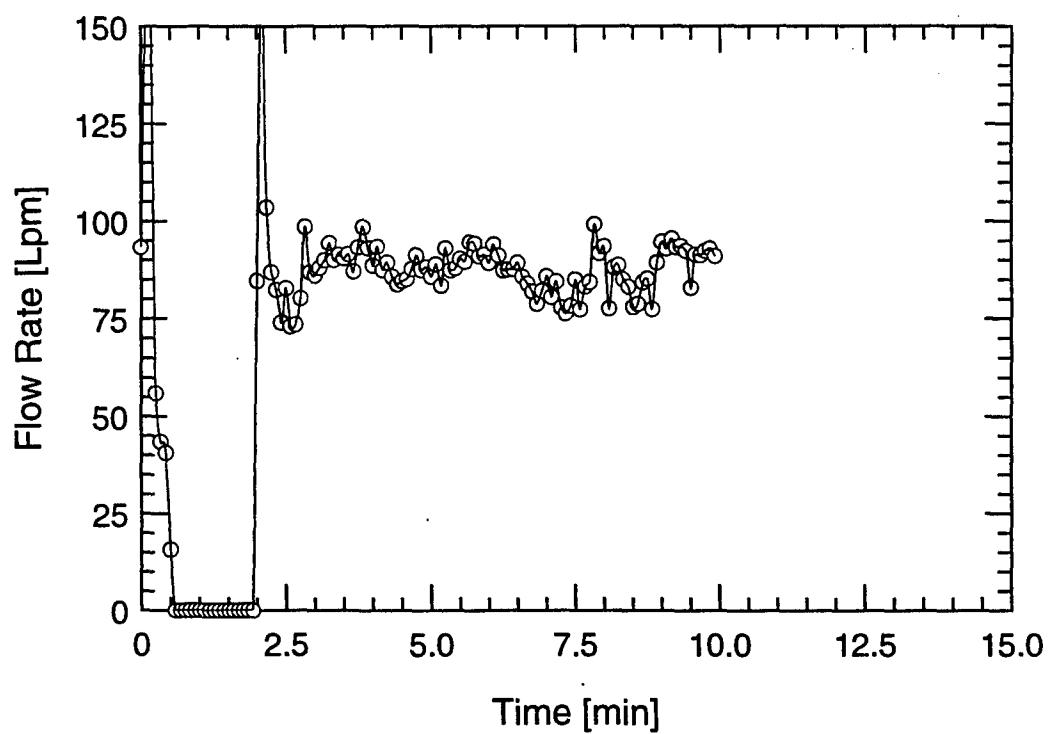
TEST #16

B-97

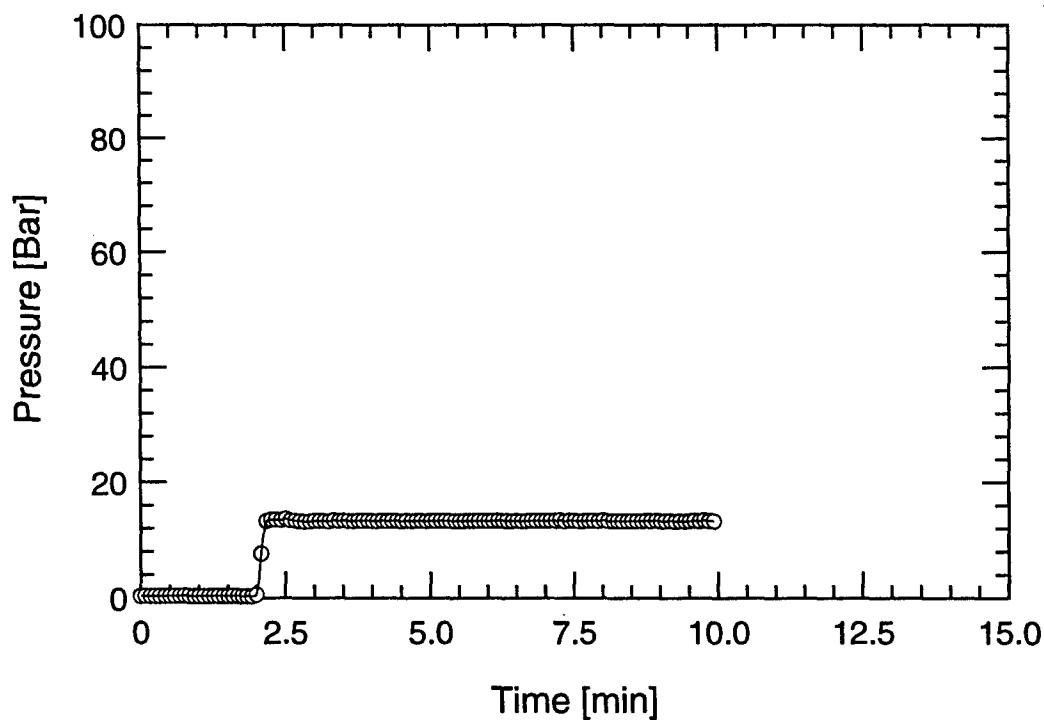


TEST #16

B-98

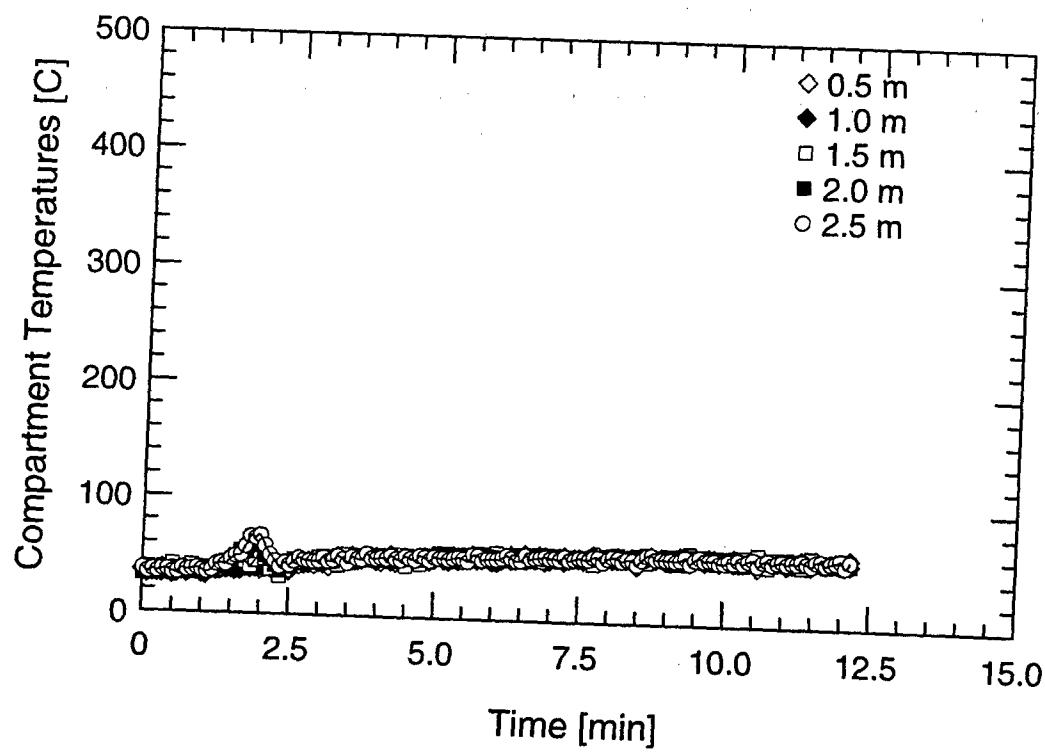


Water Mist System Flow Rate

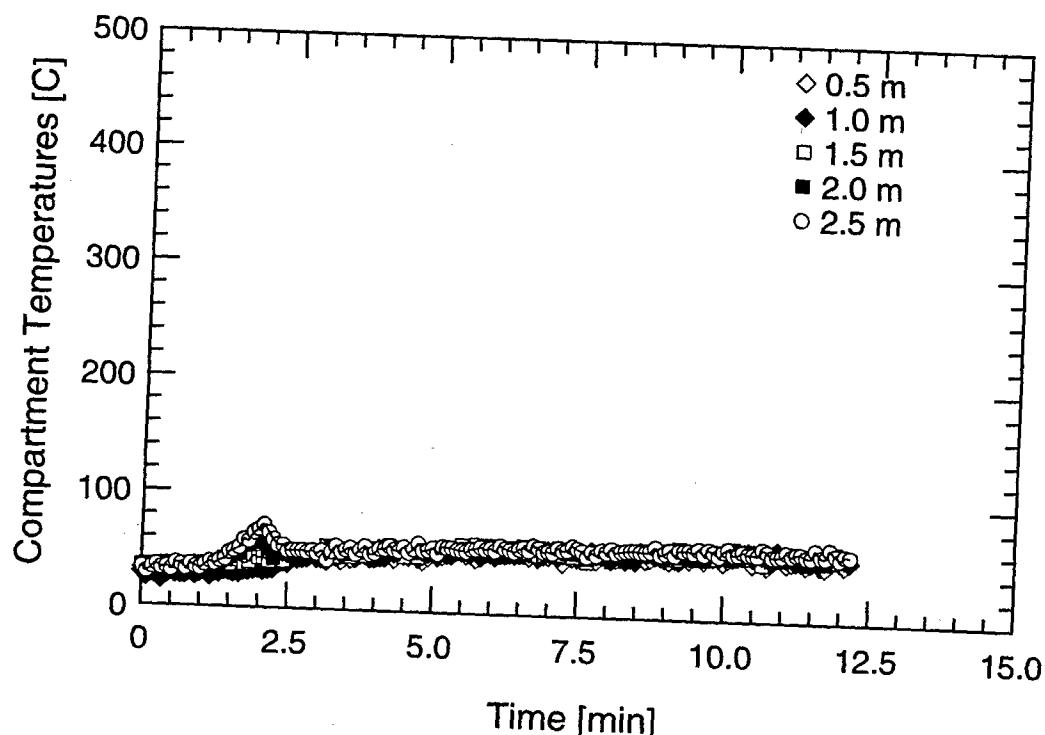


Water Mist System Pressure

TEST #16



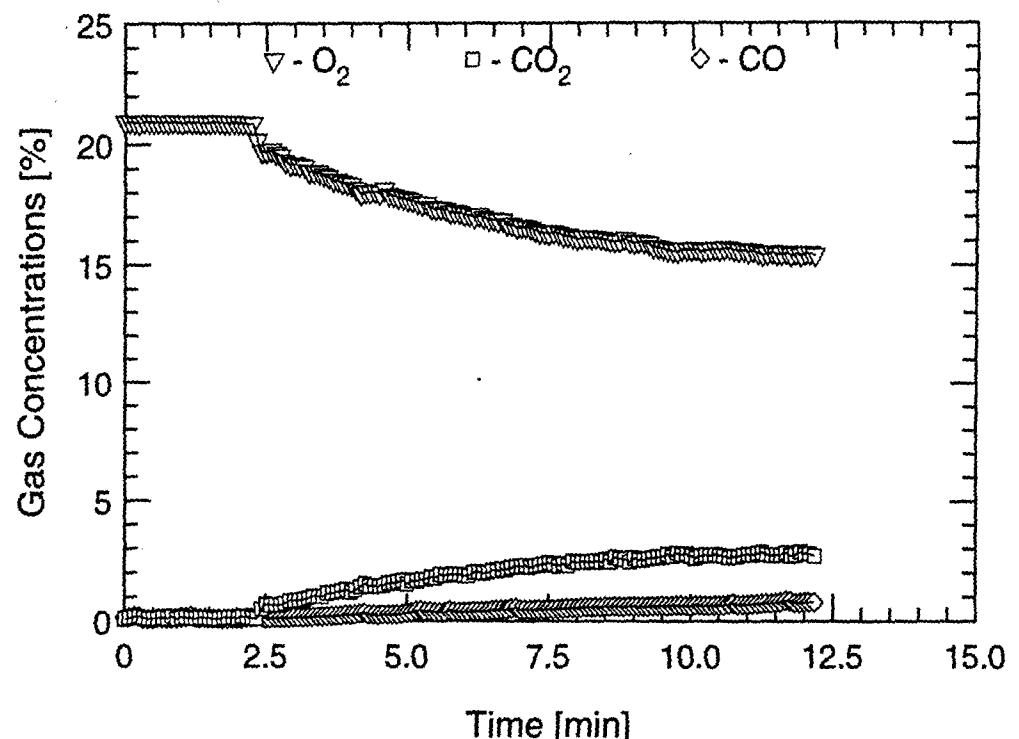
Aft Tree



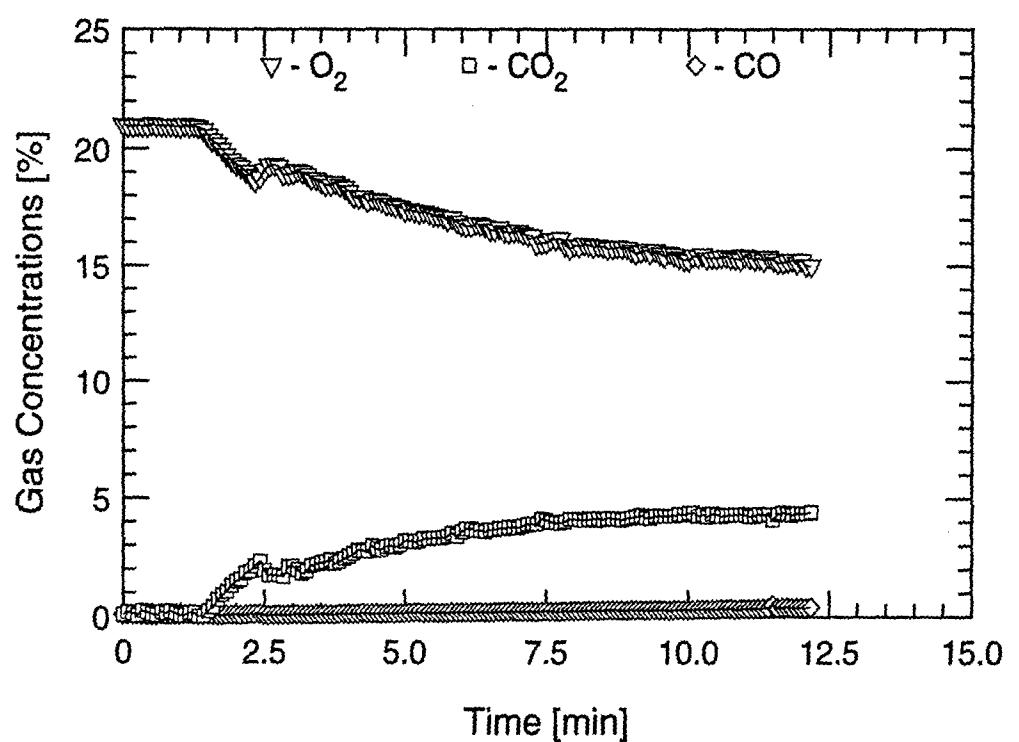
Forward Tree

TEST #17

B-100



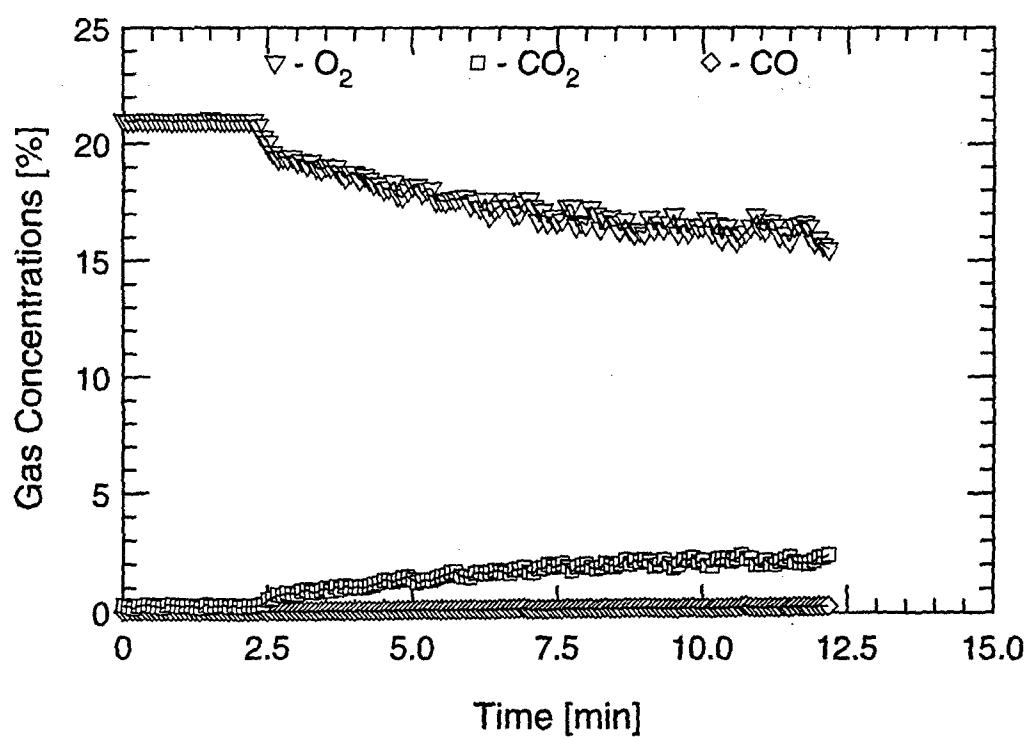
Aft Tree (Low)



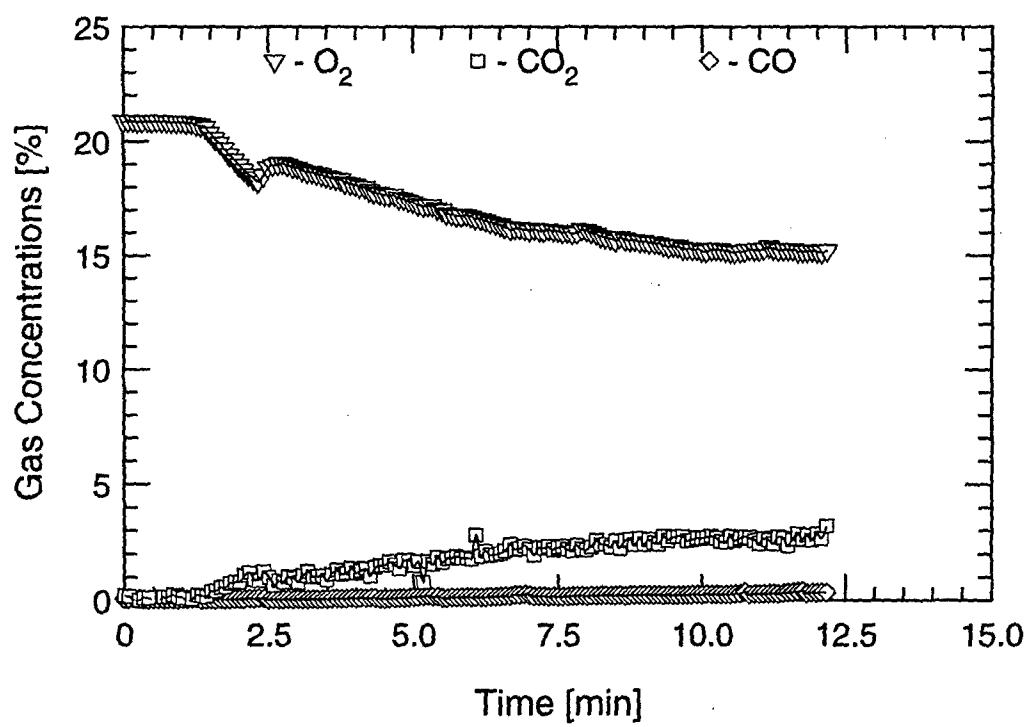
Aft Tree (High)

TEST #17

B-101



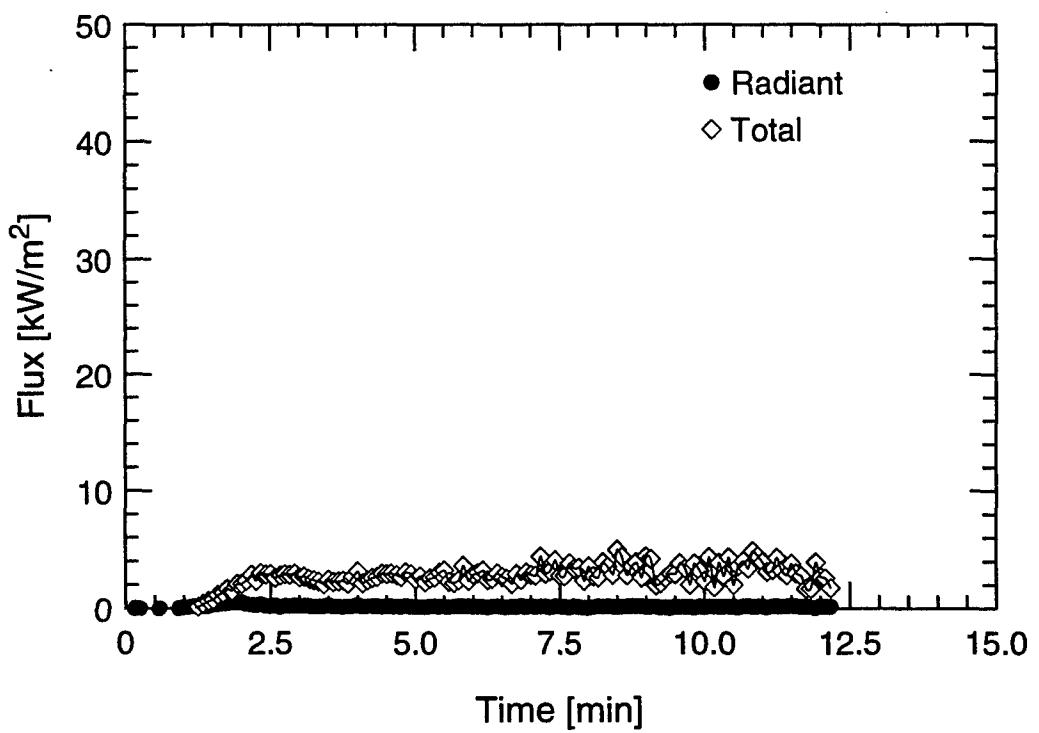
Forward Tree (Low)



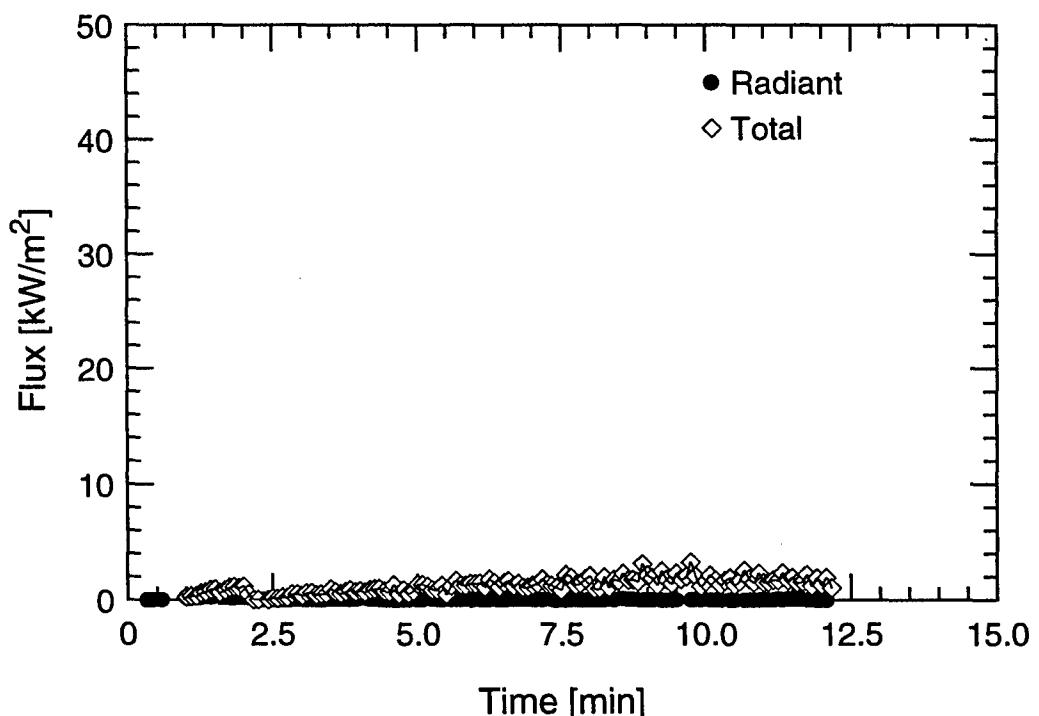
Forward Tree (High)

TEST #17

B-102



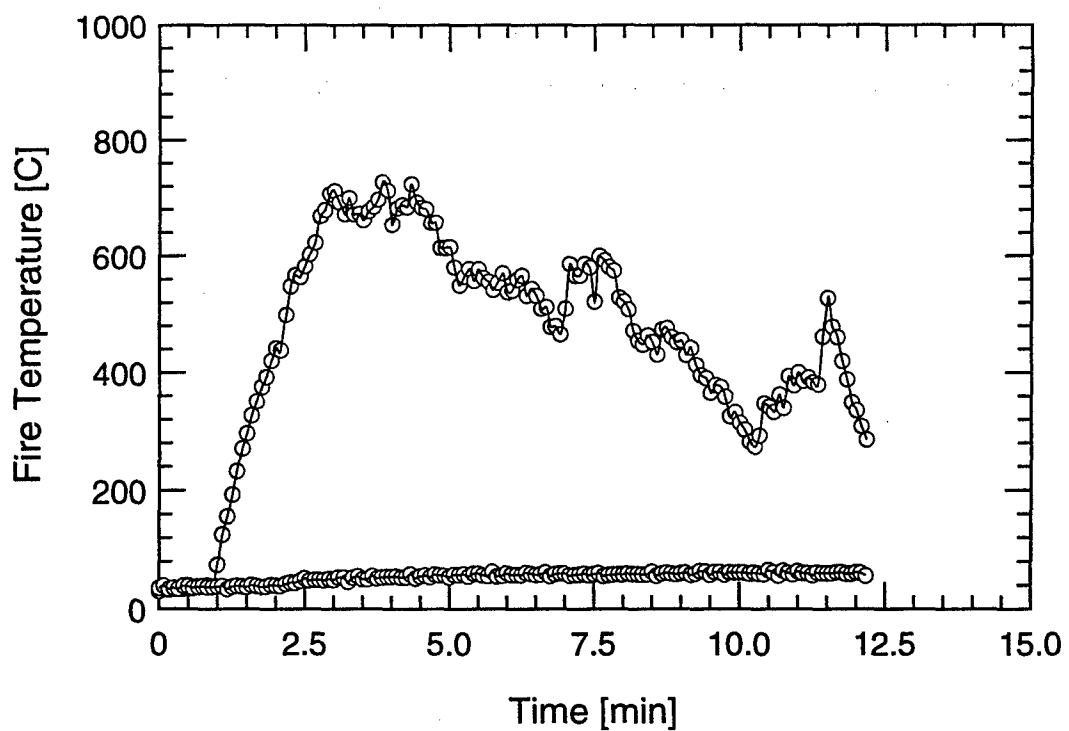
Overhead



Forward Bulkhead

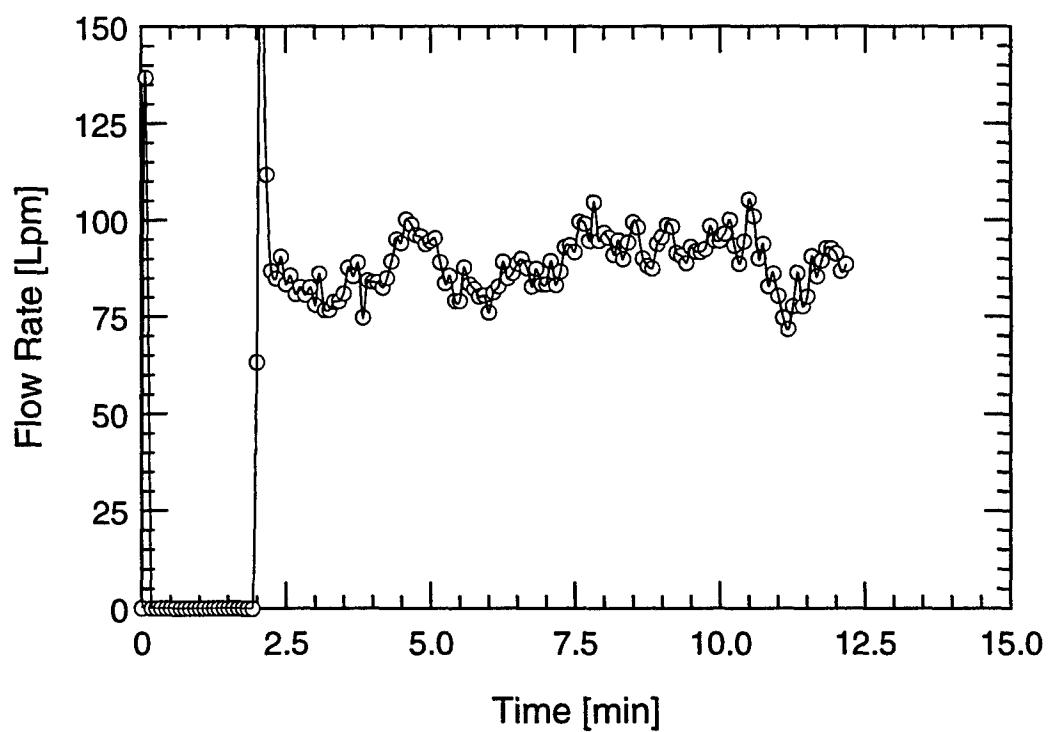
TEST #17

B-103

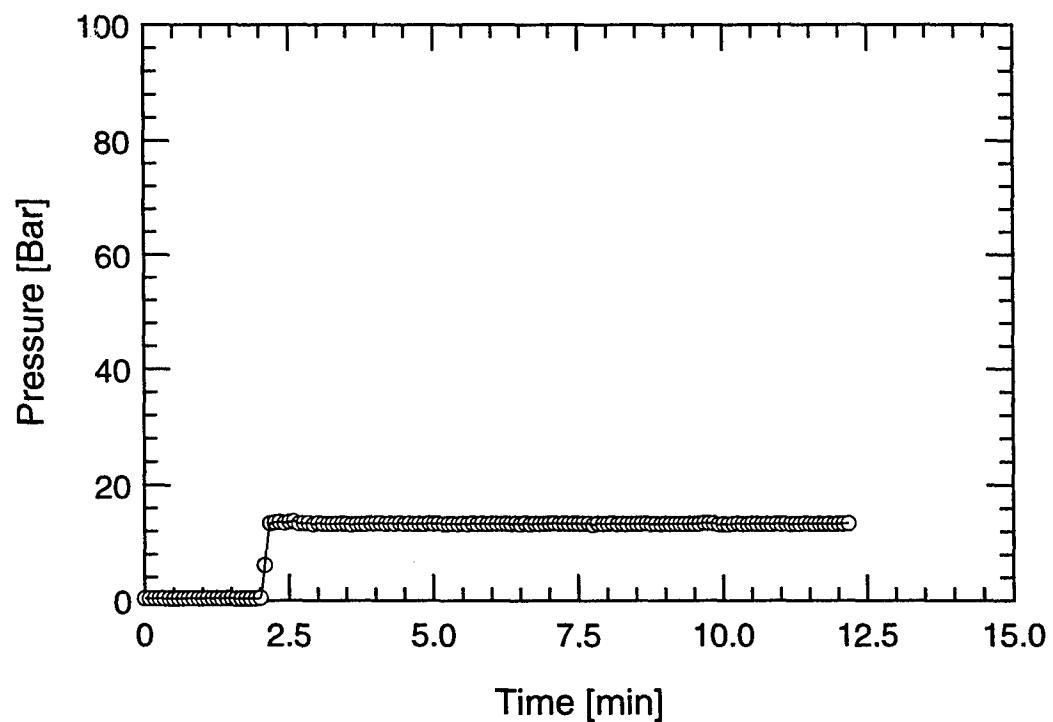


TEST #17

B-104



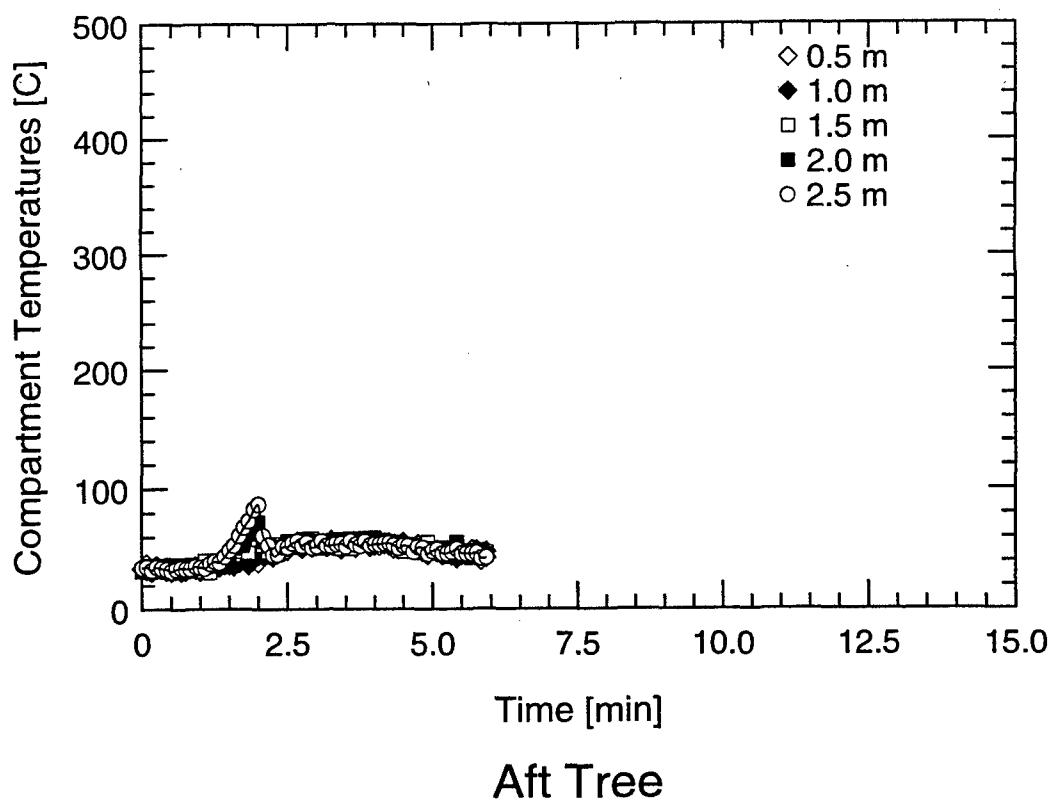
Water Mist System Flow Rate



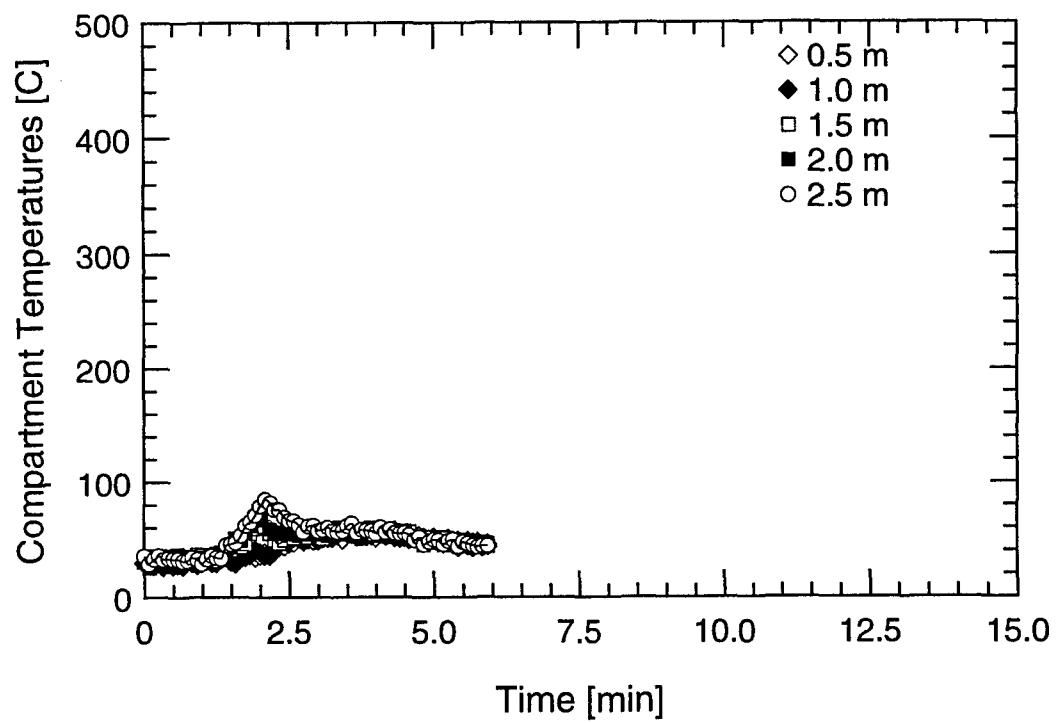
Water Mist System Pressure

TEST #17

B-105



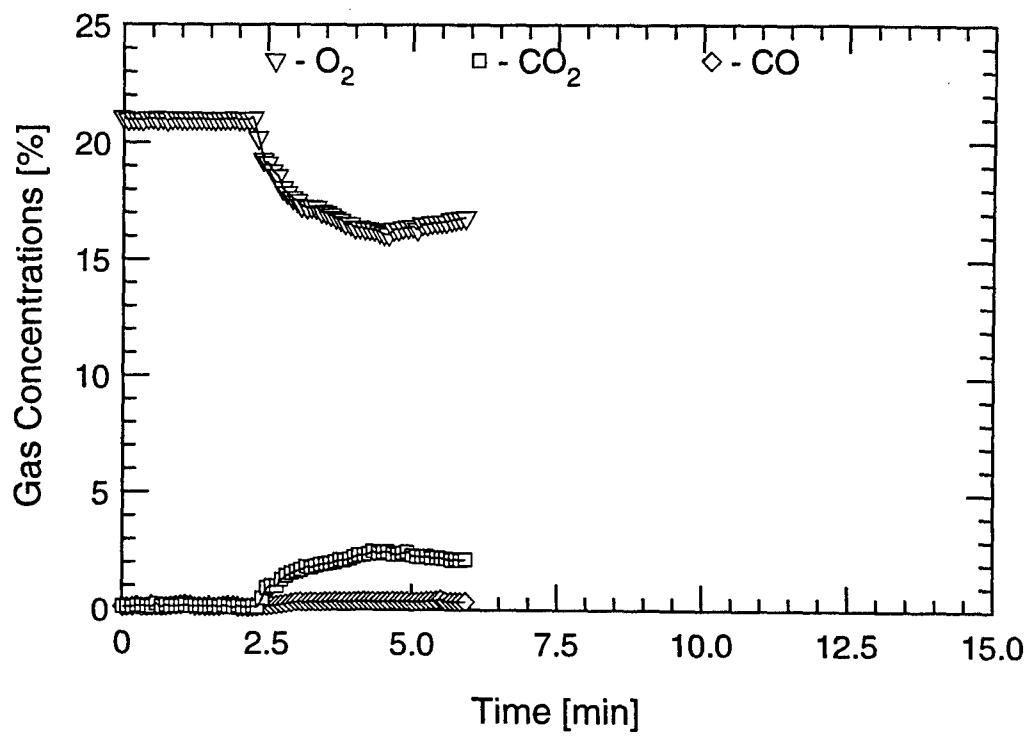
Aft Tree



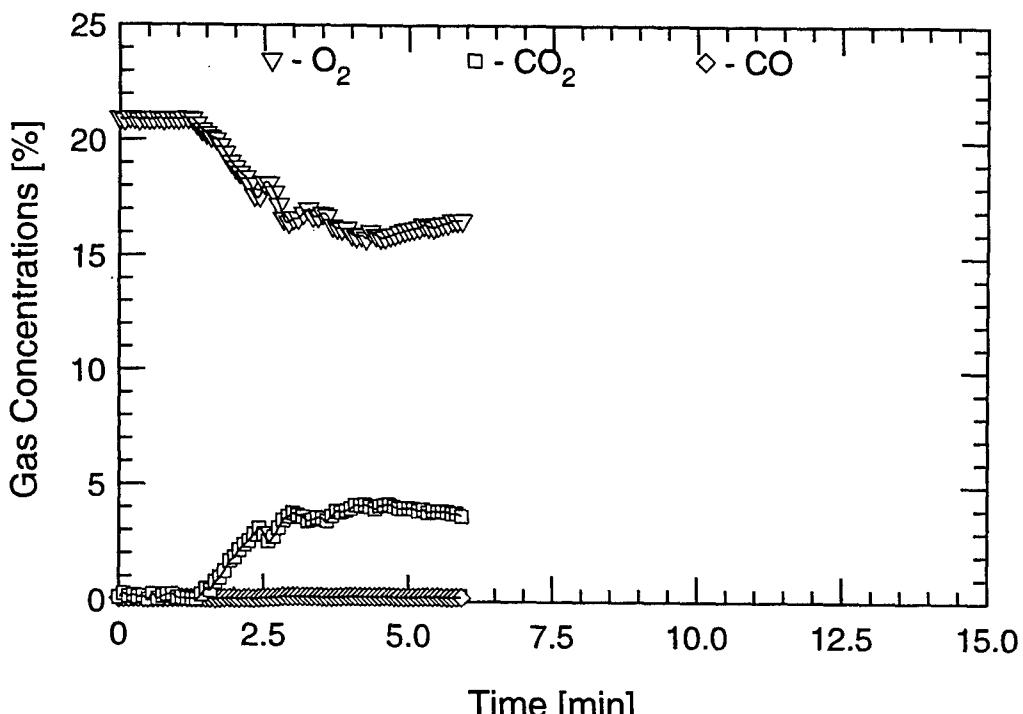
Forward Tree

TEST #18

B-106



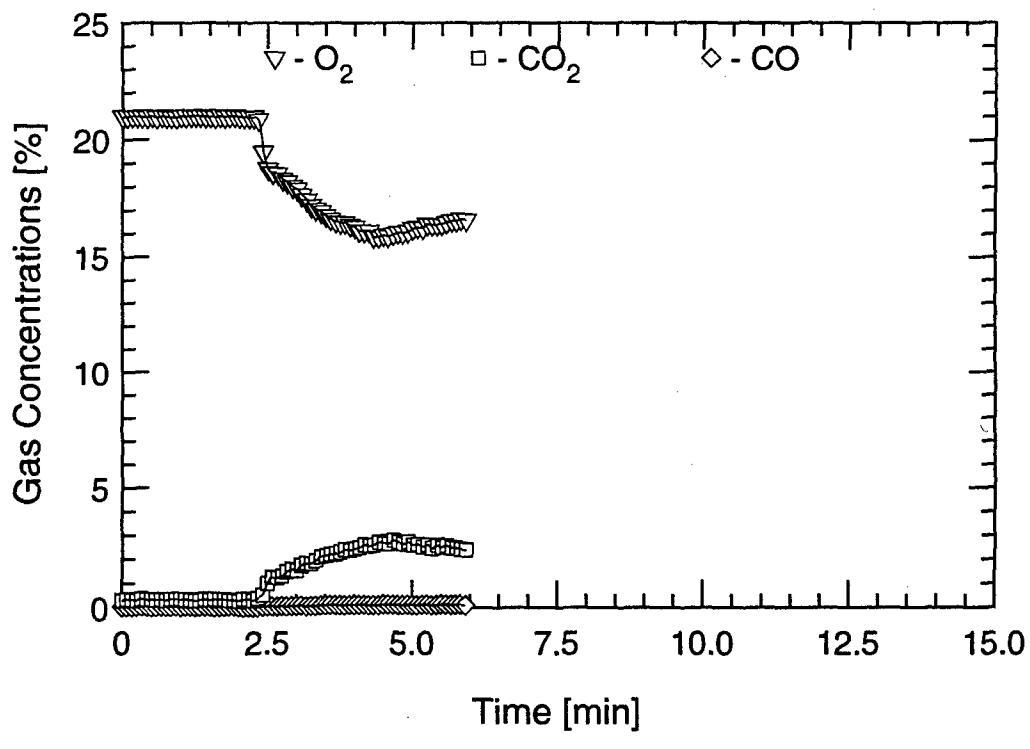
Aft Tree (Low)



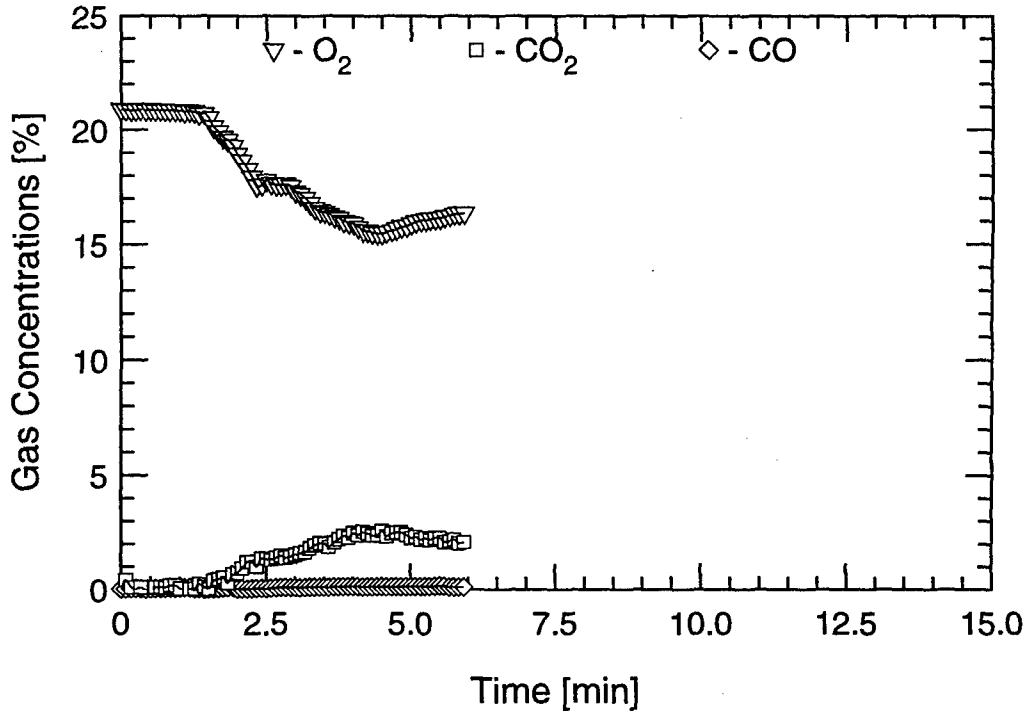
Aft Tree (High)

TEST #18

B-107



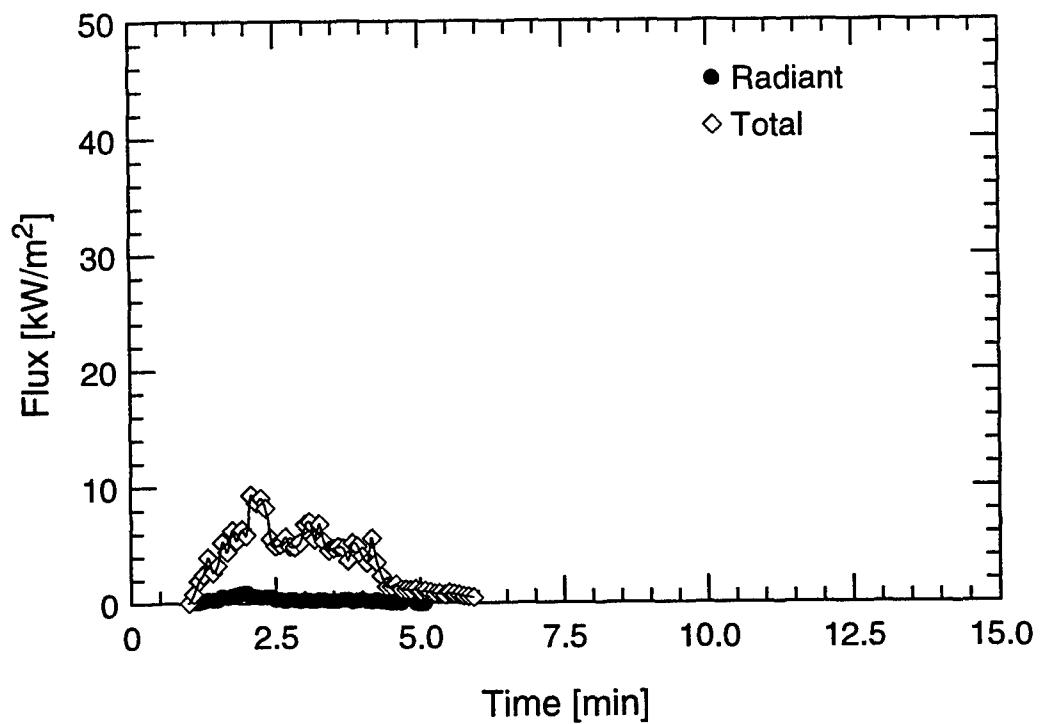
Forward Tree (Low)



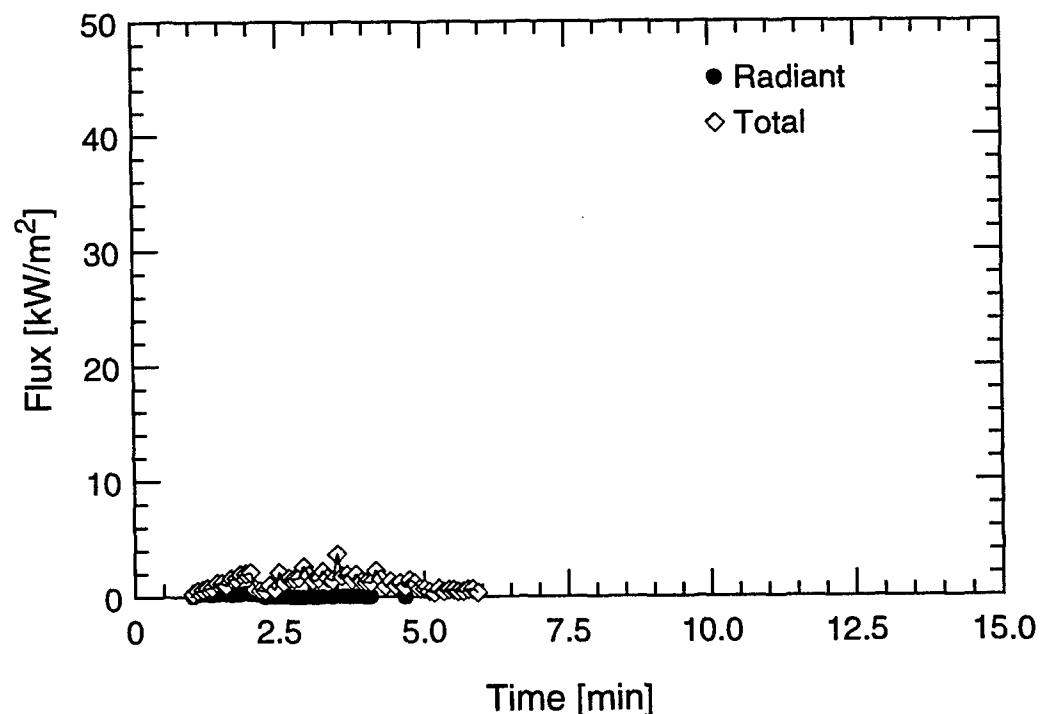
Forward Tree (High)

TEST #18

B-108



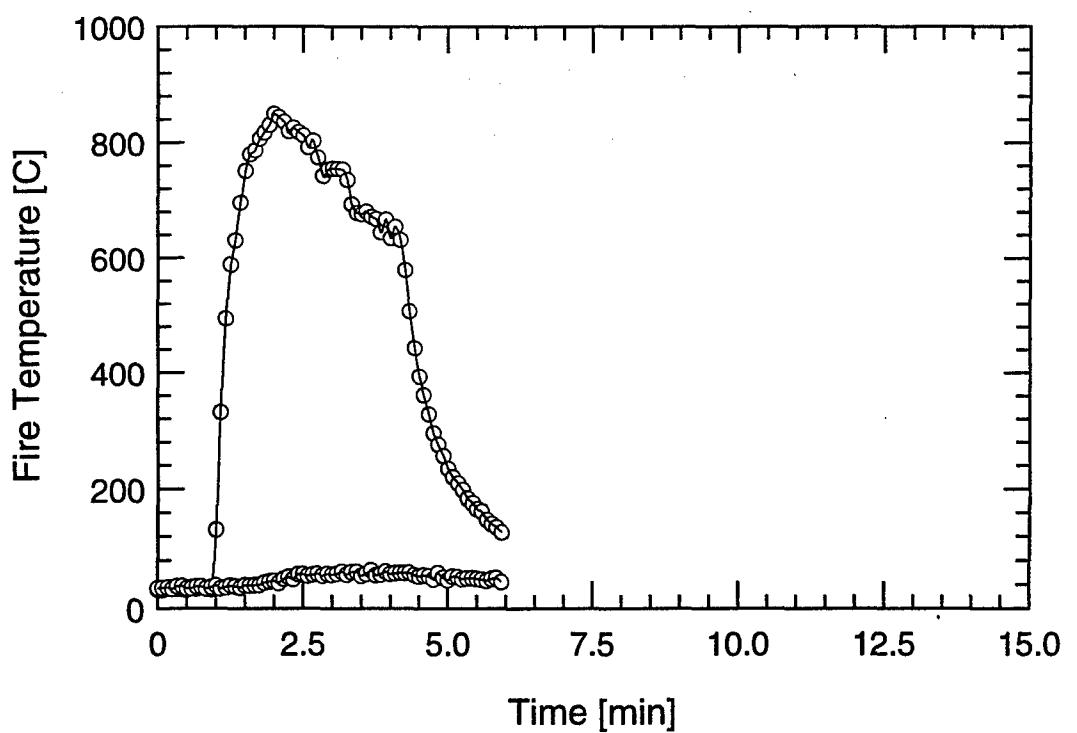
Overhead



Forward Bulkhead

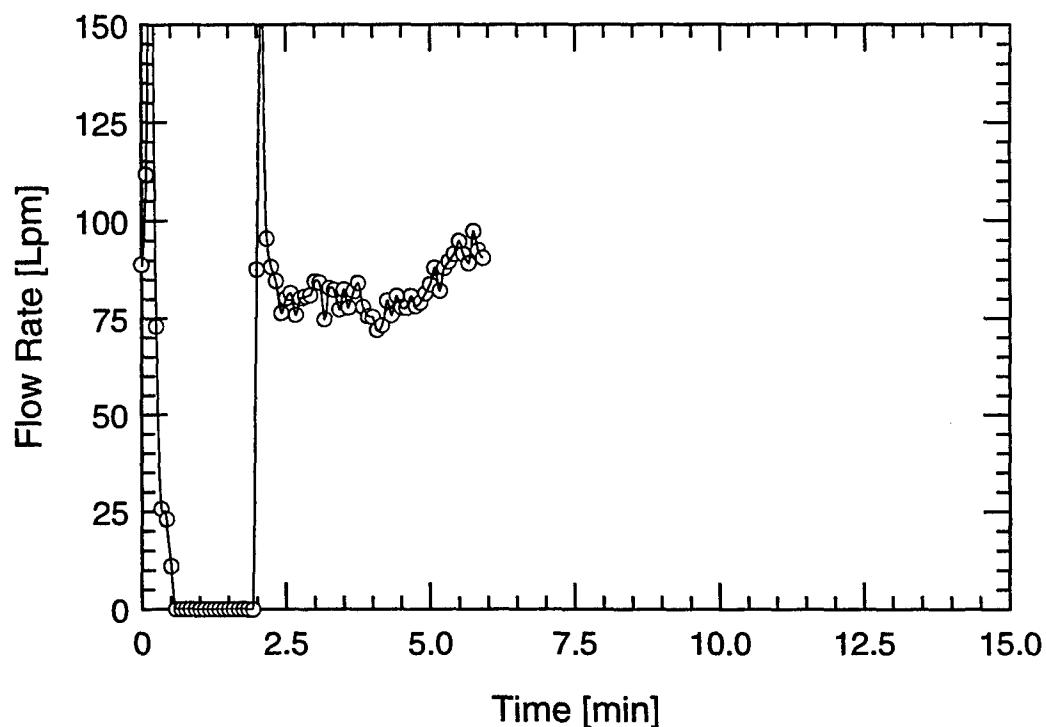
TEST #18

B-109

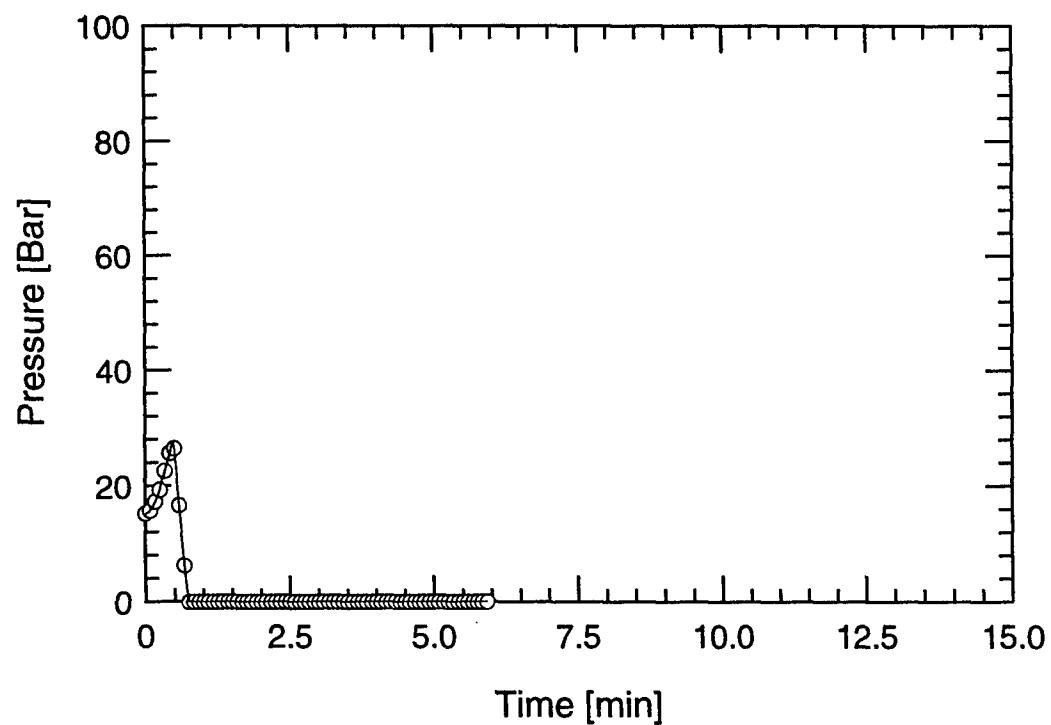


TEST #18

B-110

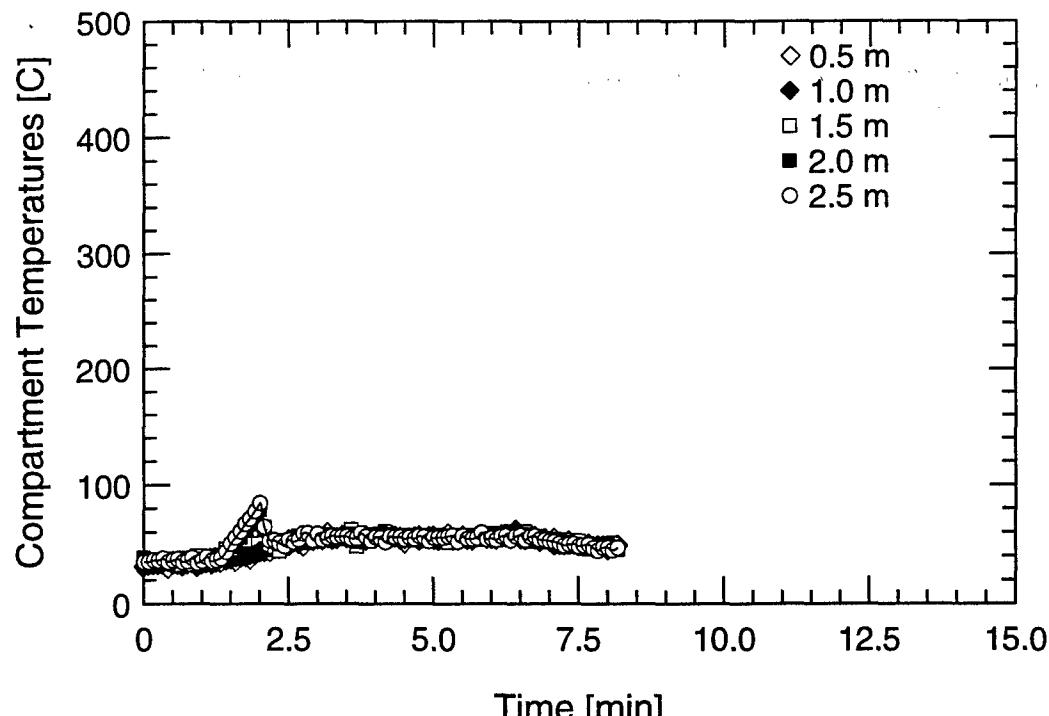


Water Mist System Flow Rate

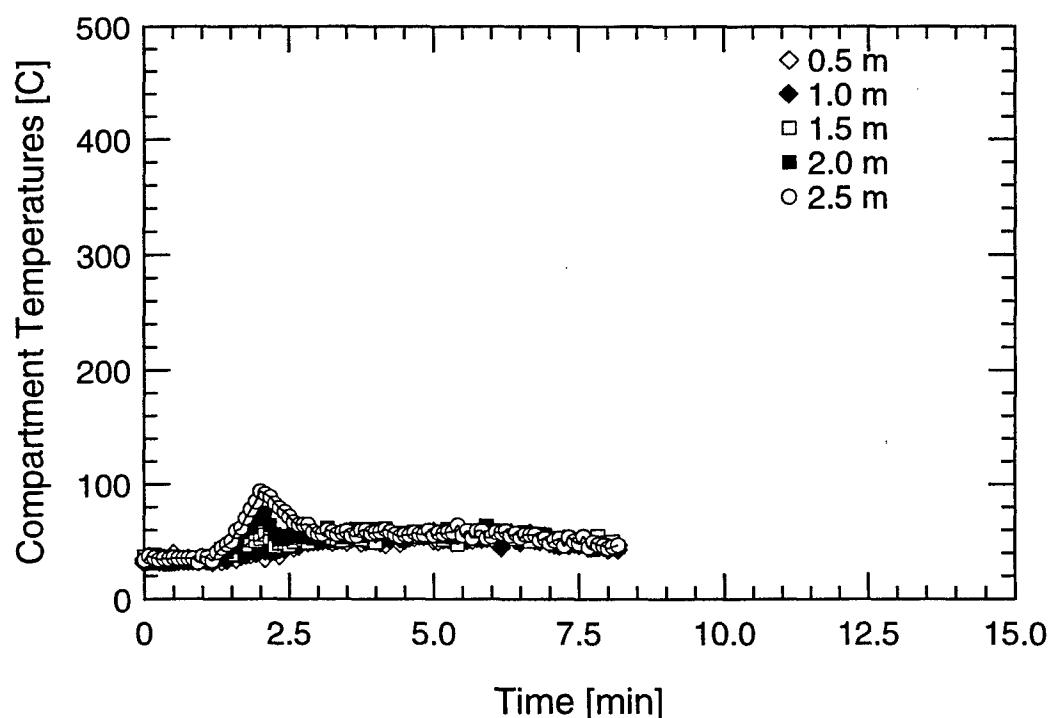


Water Mist System Pressure

TEST #18



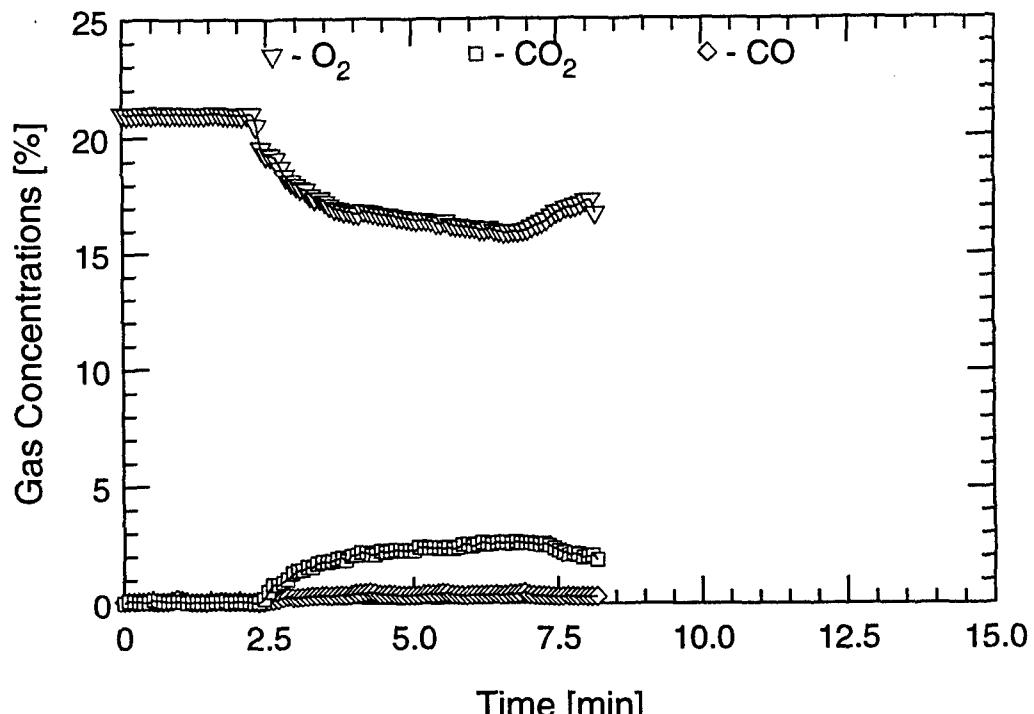
Aft Tree



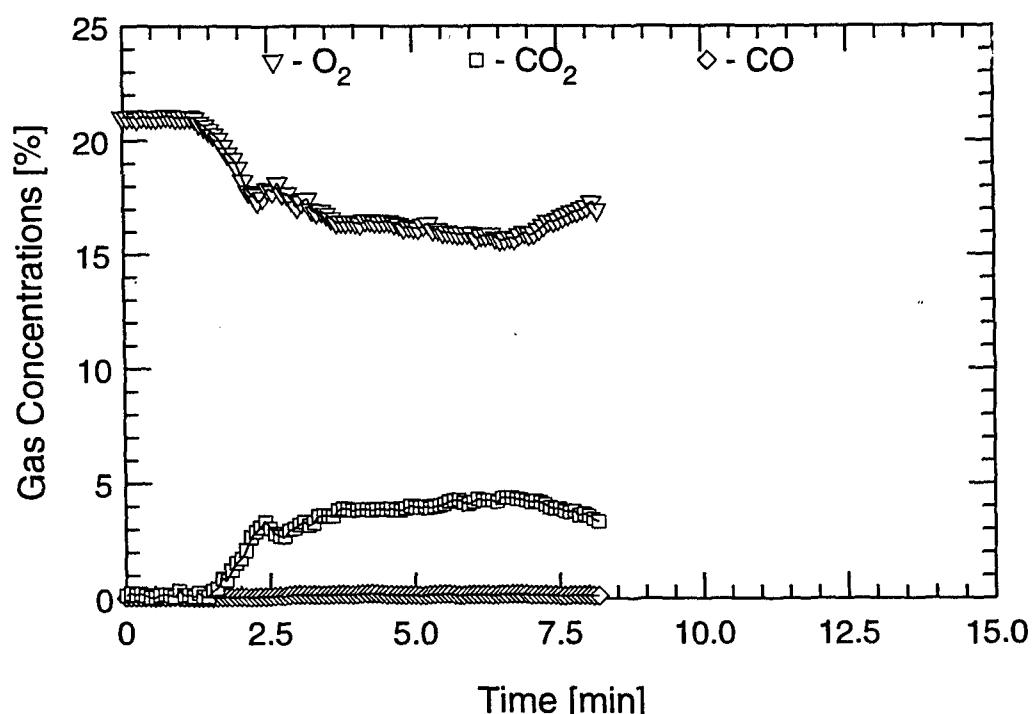
Forward Tree

TEST #19

B-112



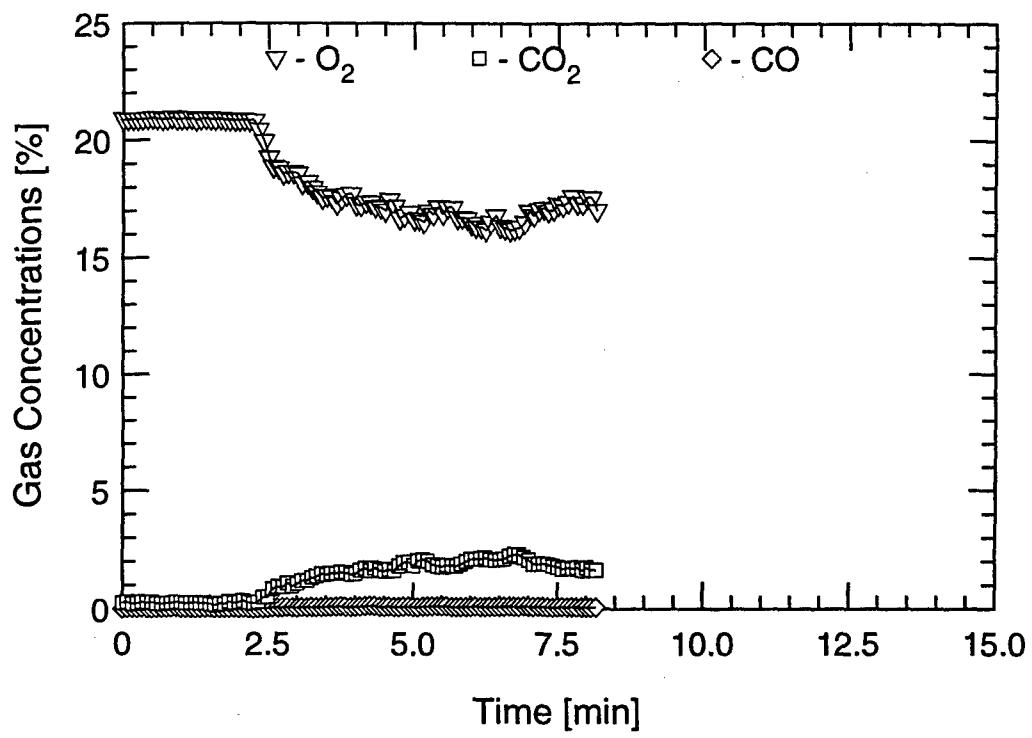
Aft Tree (Low)



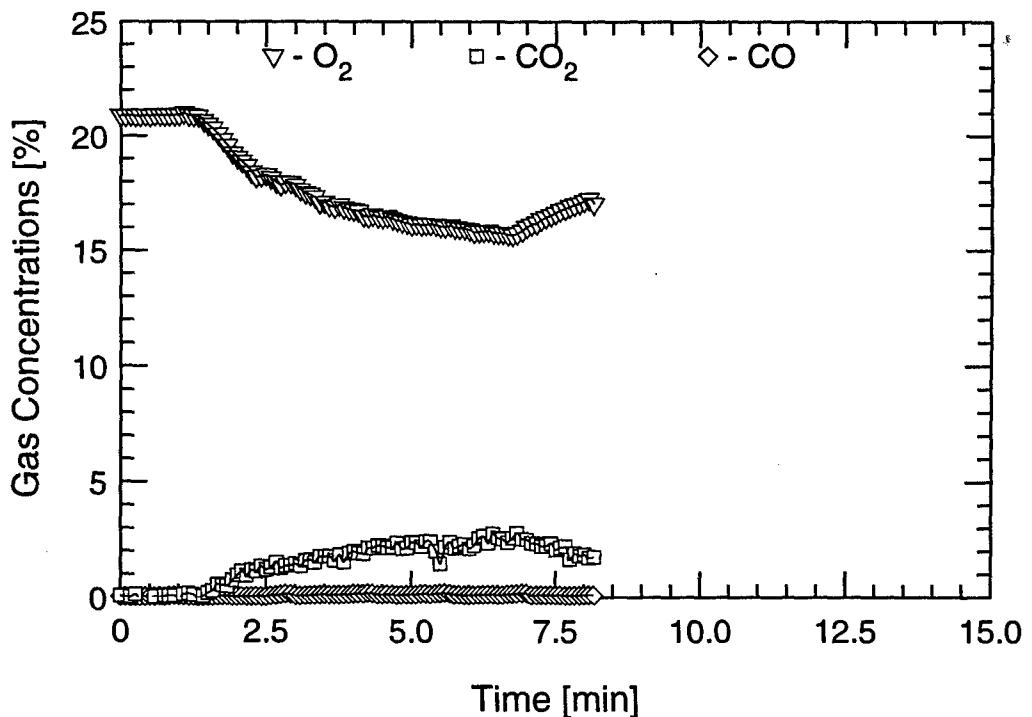
Aft Tree (High)

TEST #19

B-113



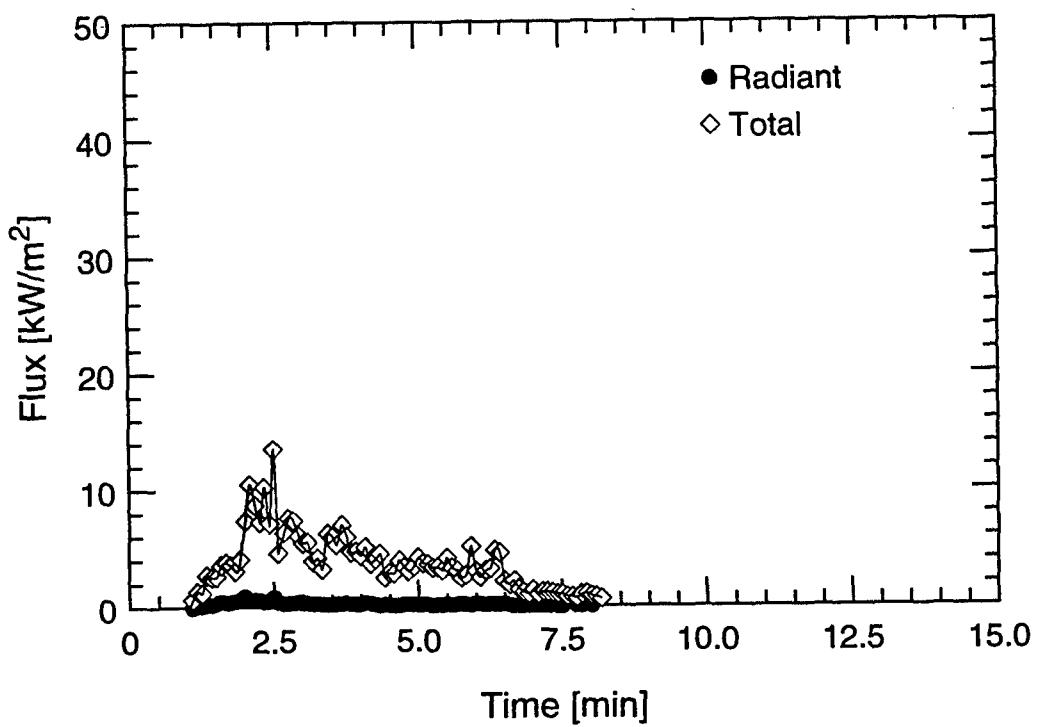
Forward Tree (Low)



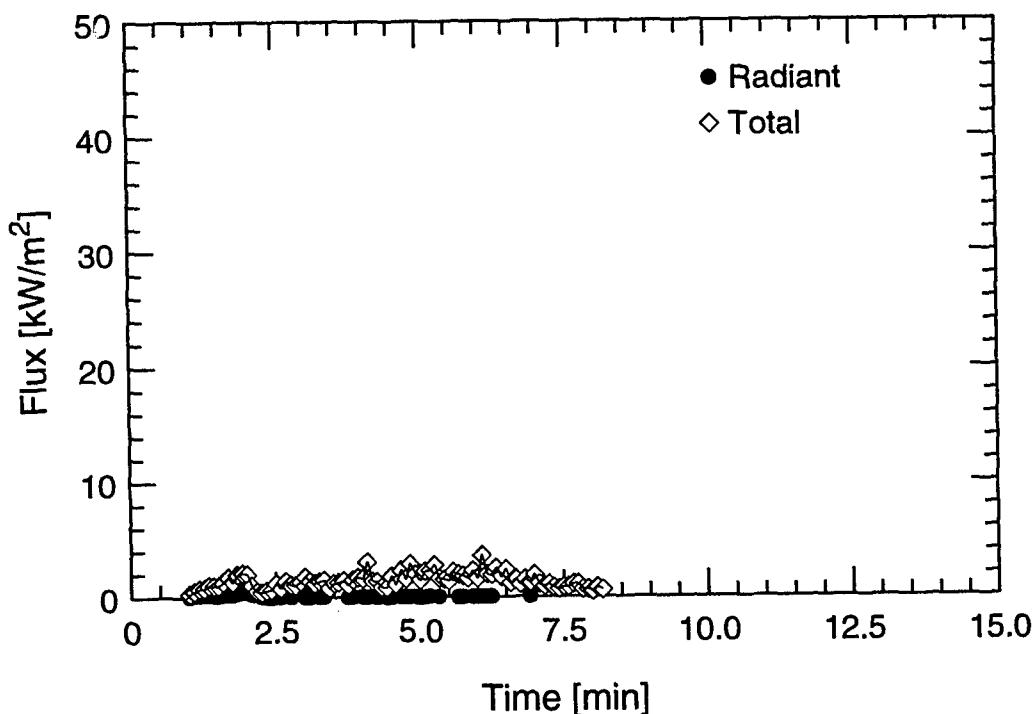
Forward Tree (High)

TEST #19

B-114



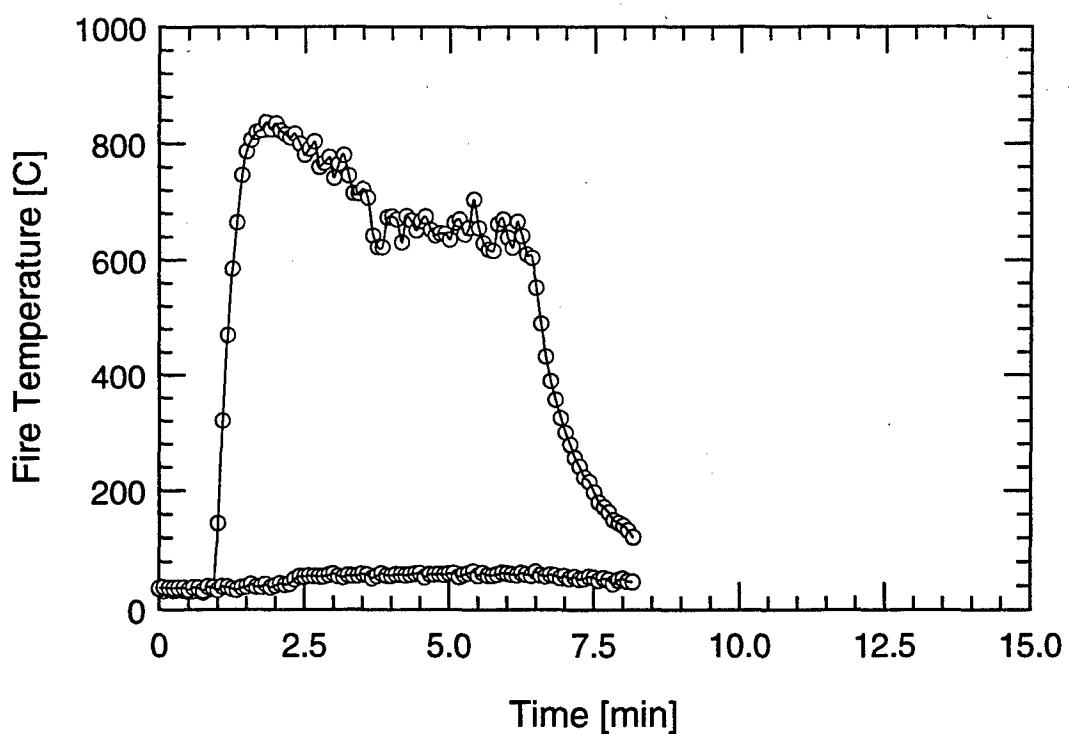
Overhead



Forward Bulkhead

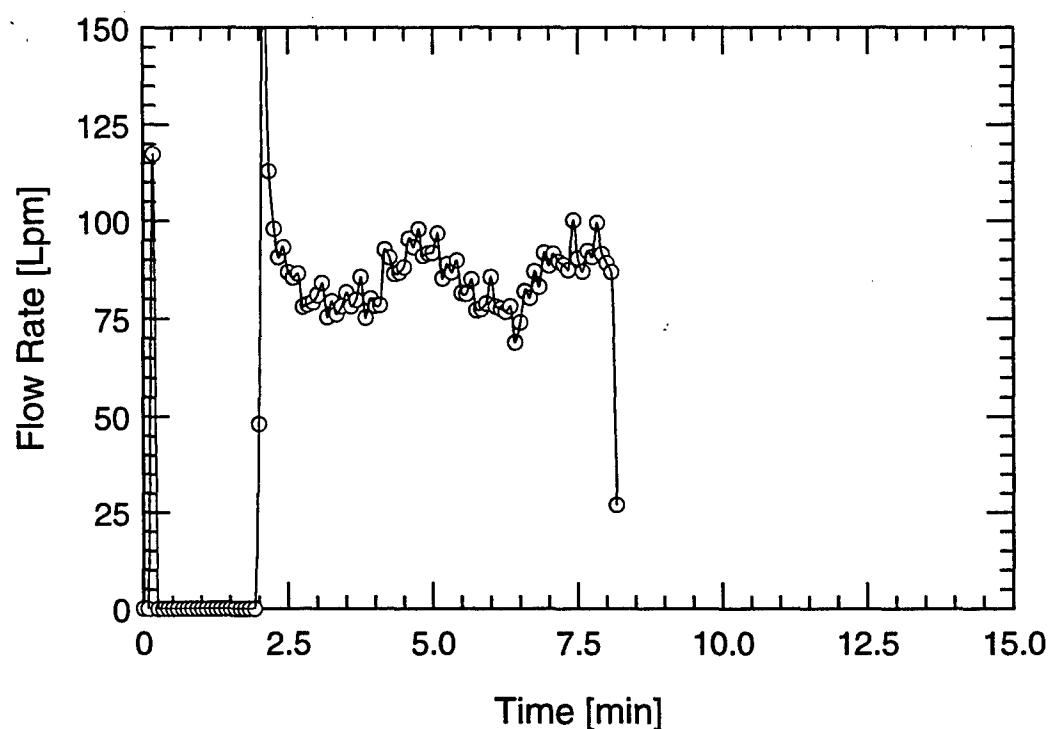
TEST #19

B-115

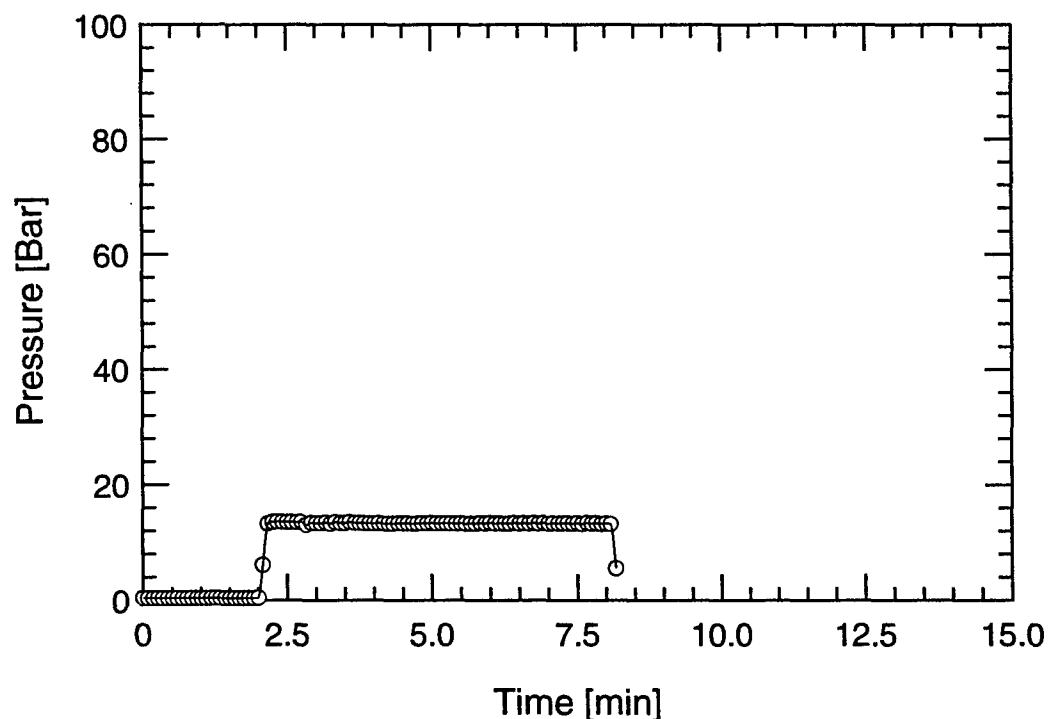


TEST #19

B-116



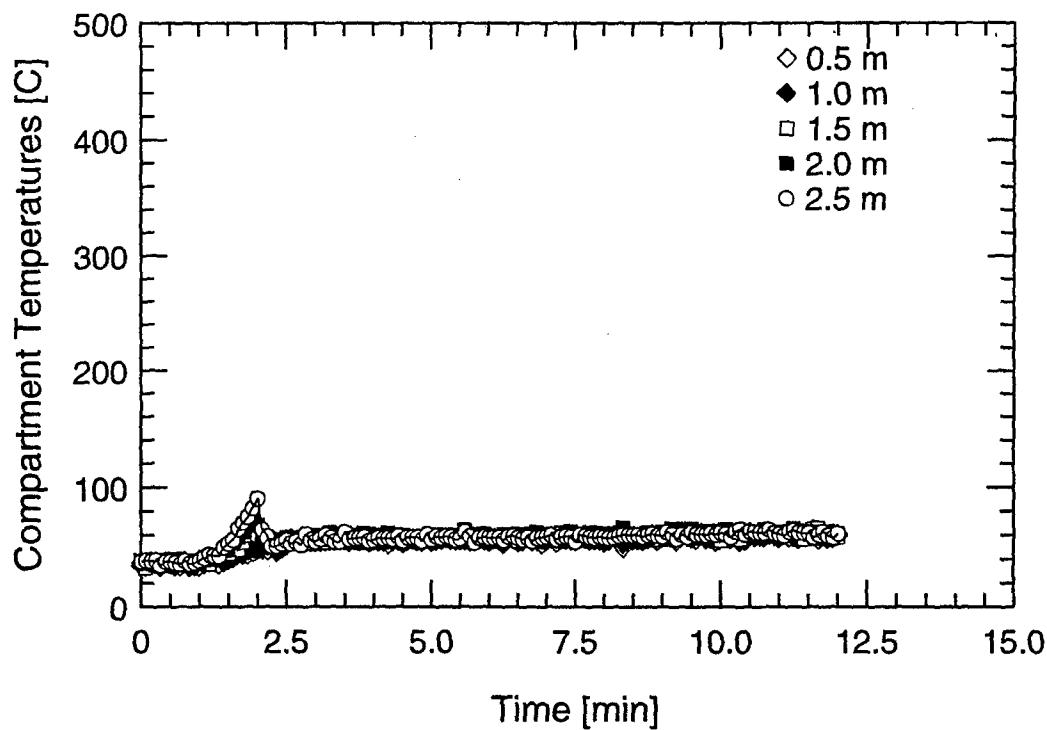
Water Mist System Flow Rate



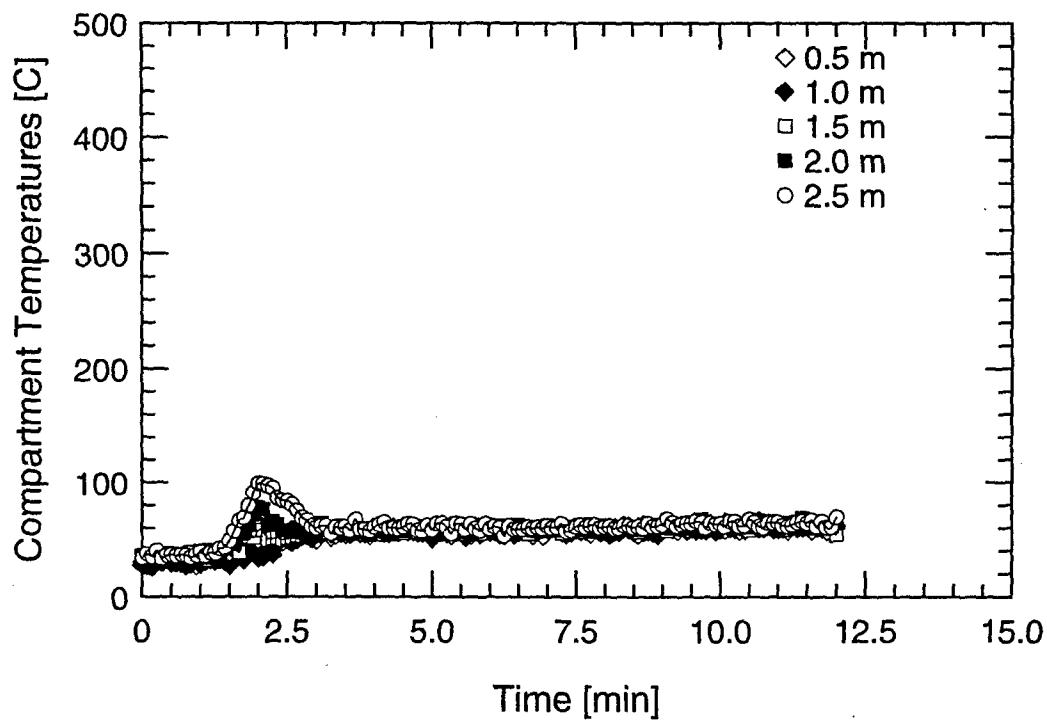
Water Mist System Pressure

TEST #19

B-117



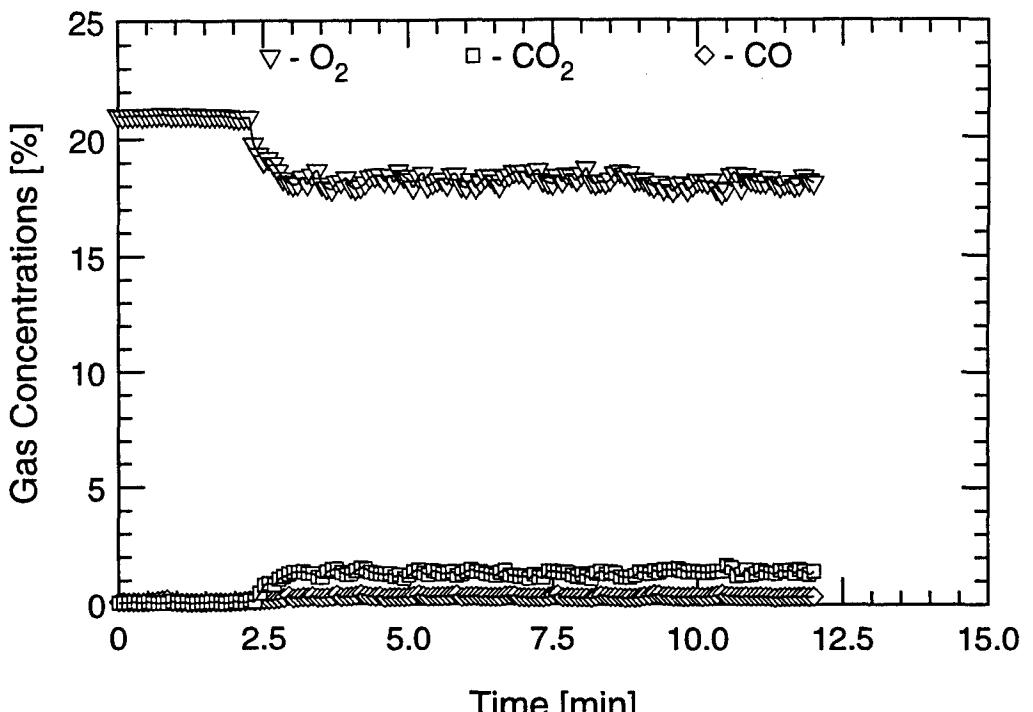
Aft Tree



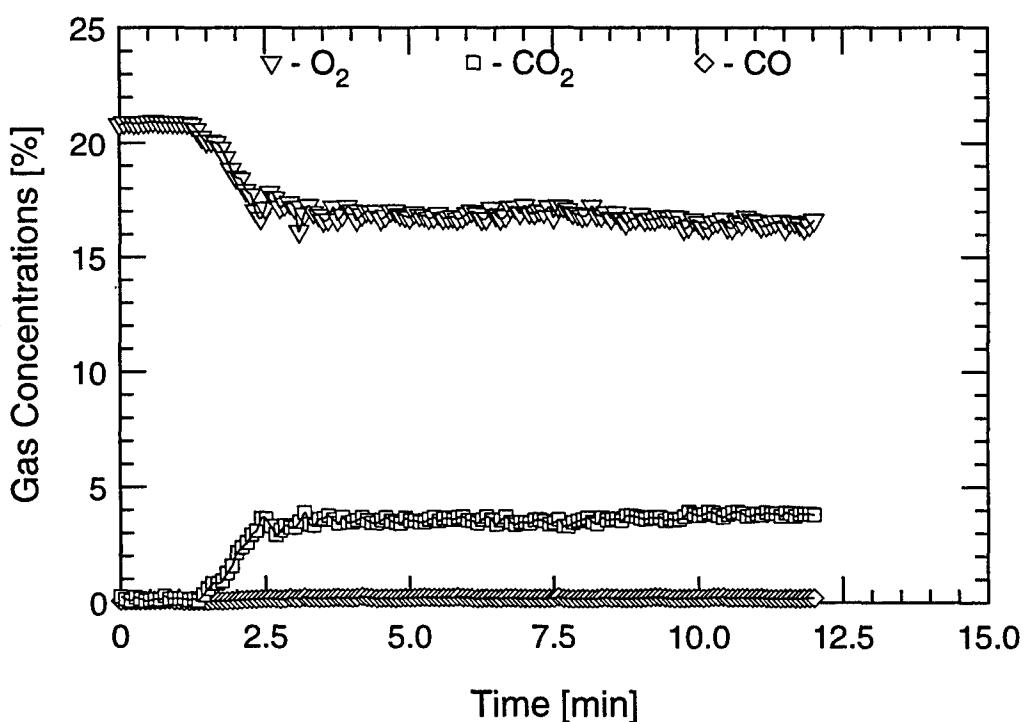
Forward Tree

TEST #20

B-118



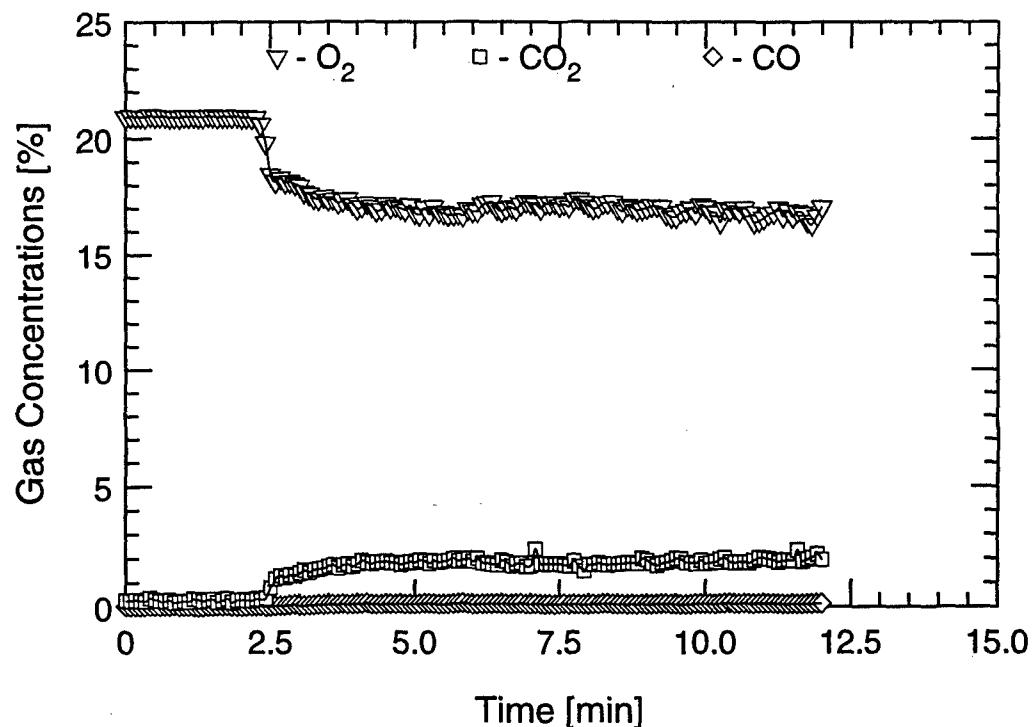
Aft Tree (Low)



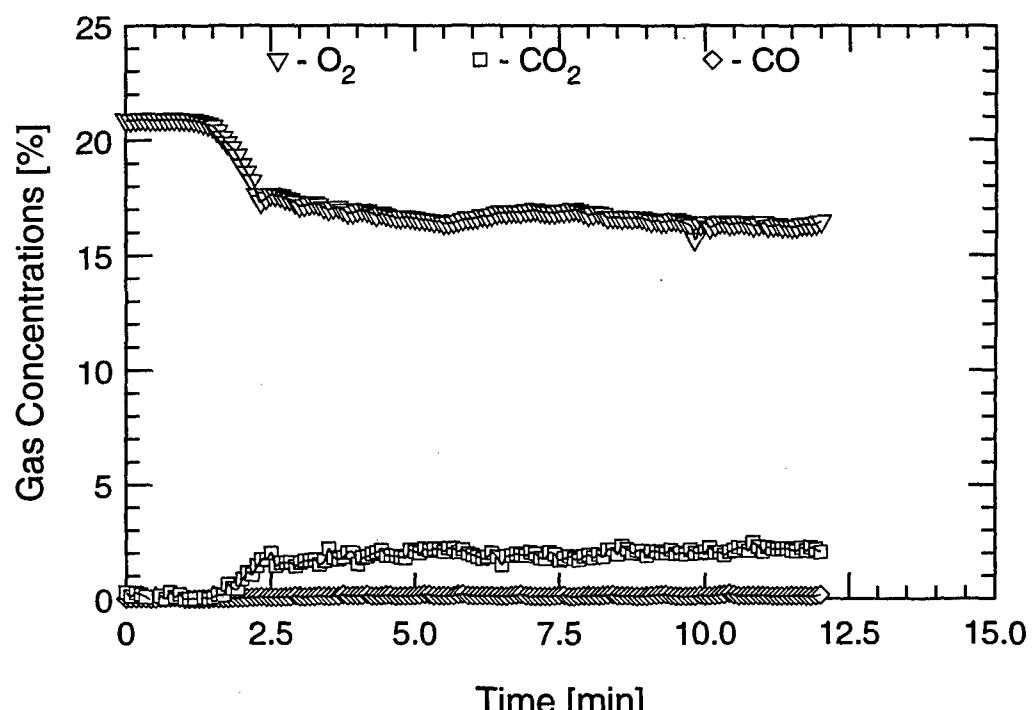
Aft Tree (High)

TEST #20

B-119



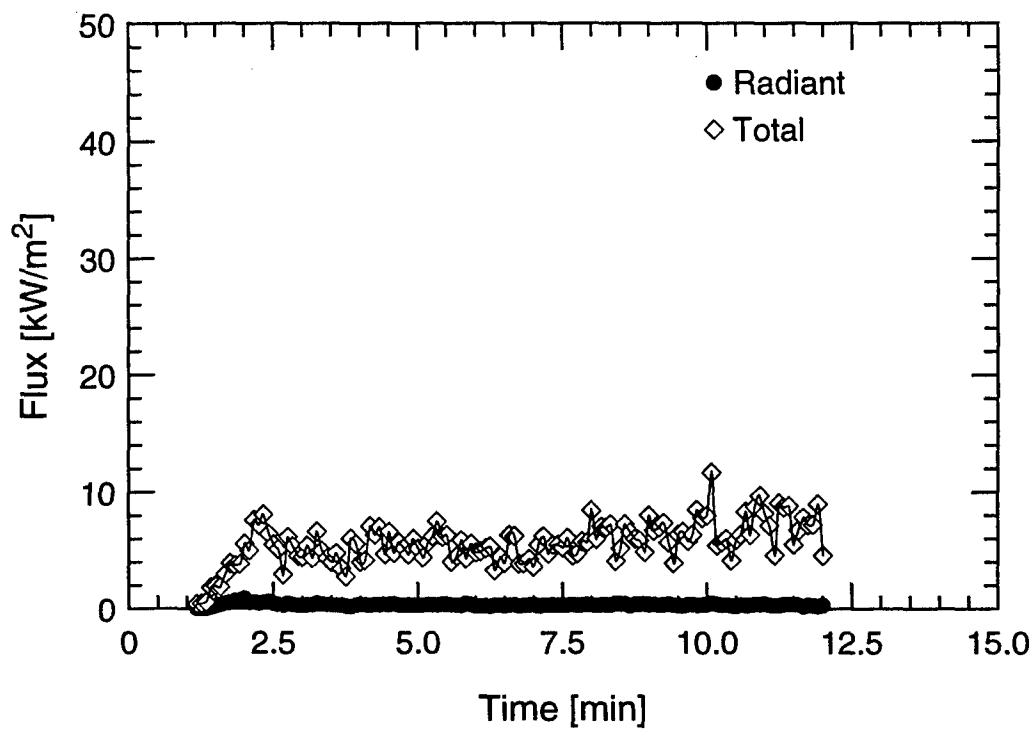
Forward Tree (Low)



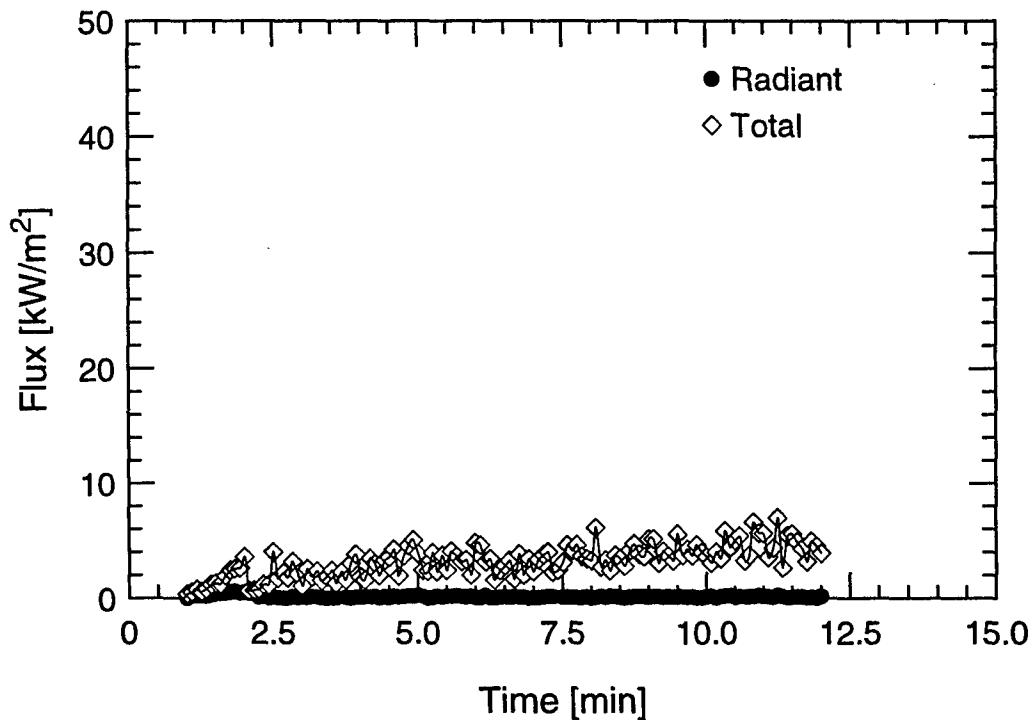
Forward Tree (High)

TEST #20

B-120



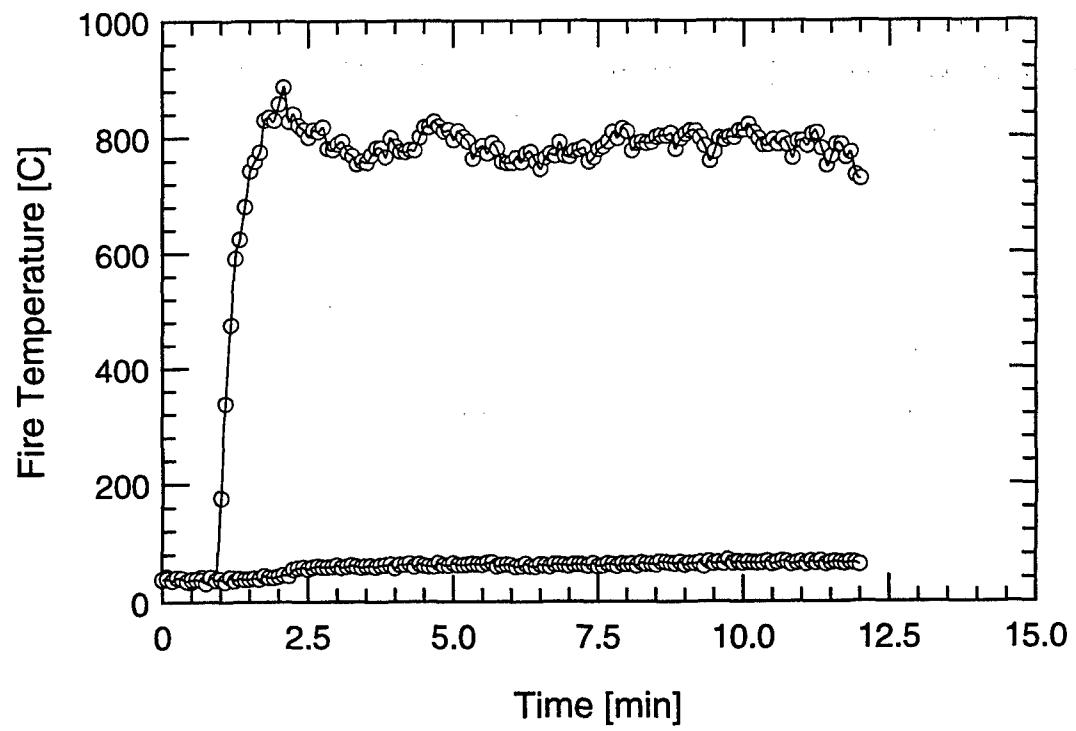
Overhead



Forward Bulkhead

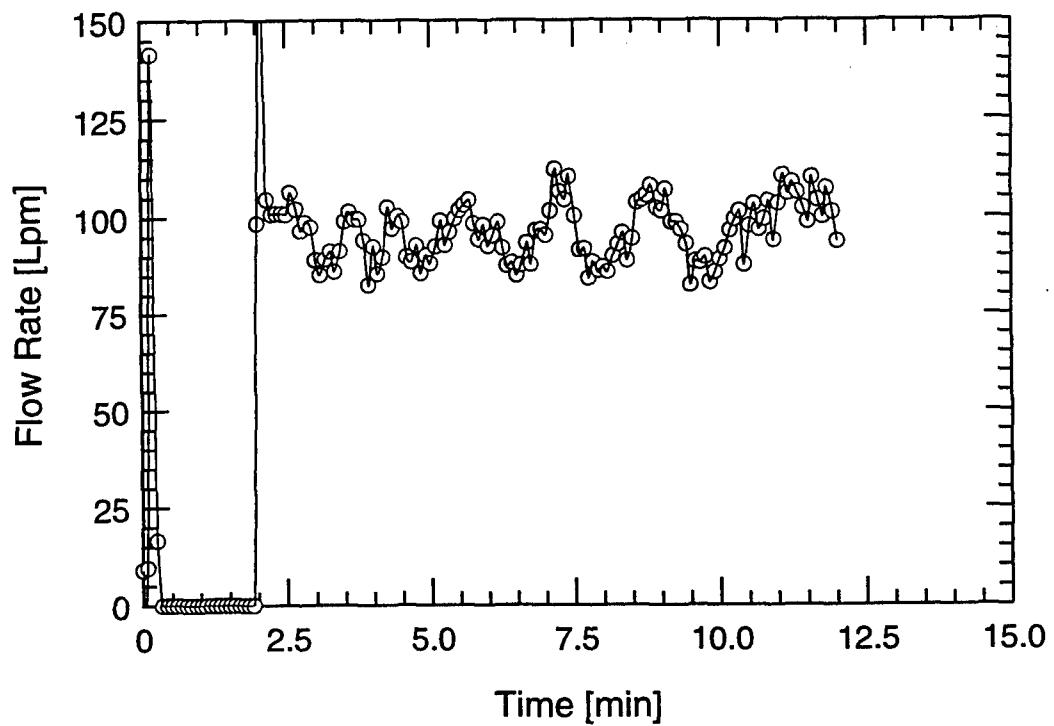
TEST #20

B-121

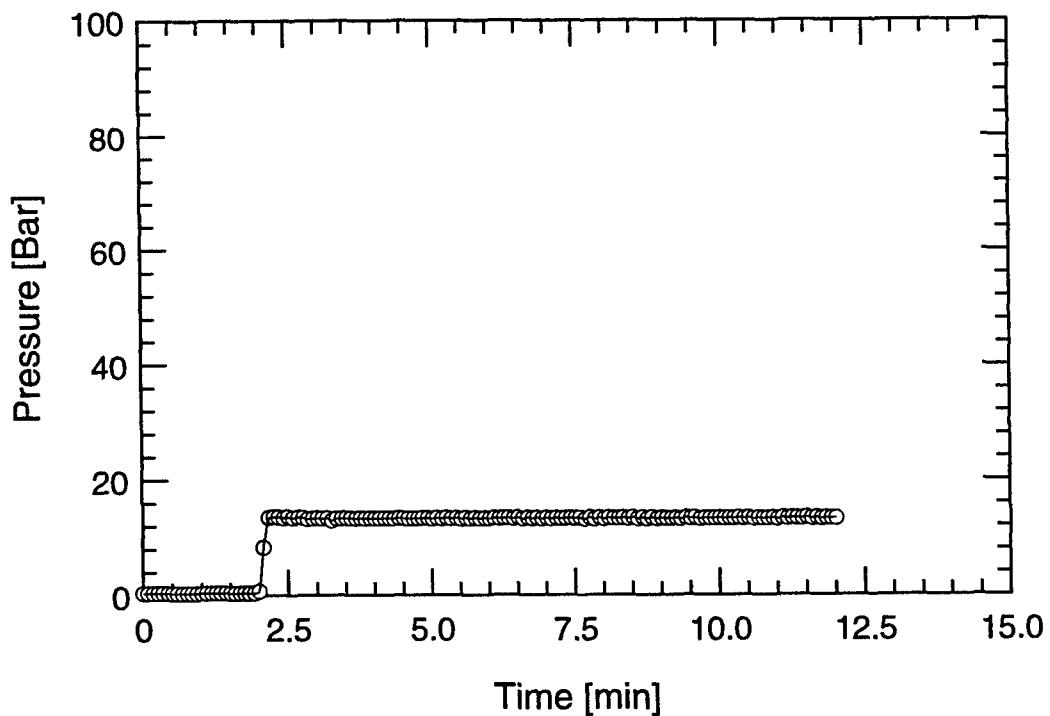


TEST #20

B-122



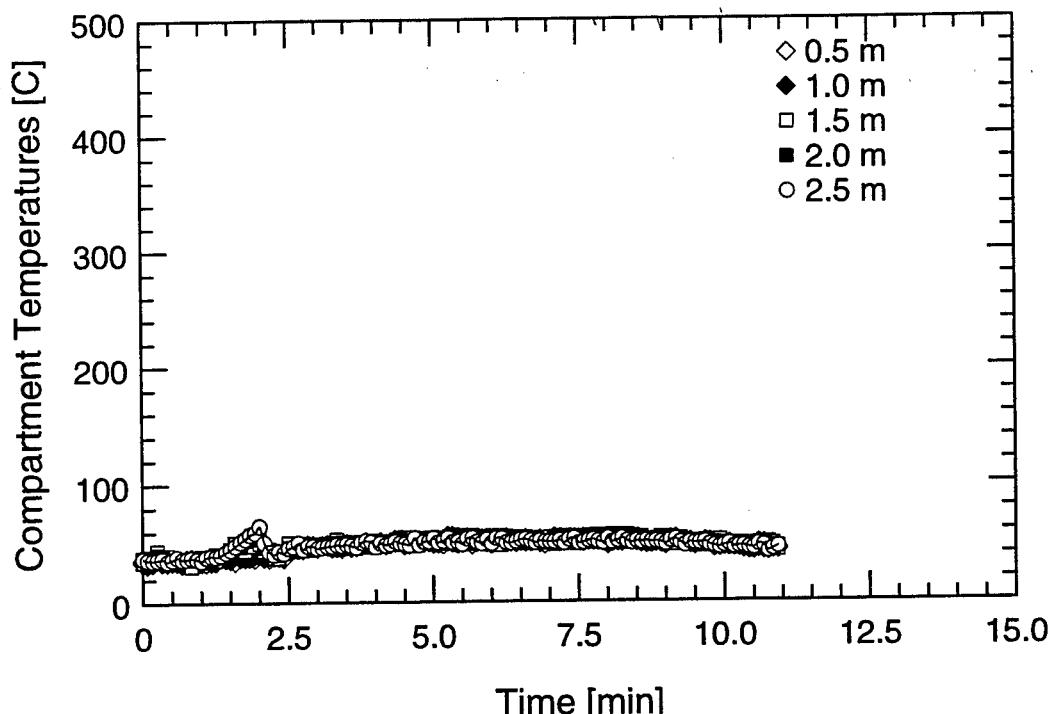
Water Mist System Flow Rate



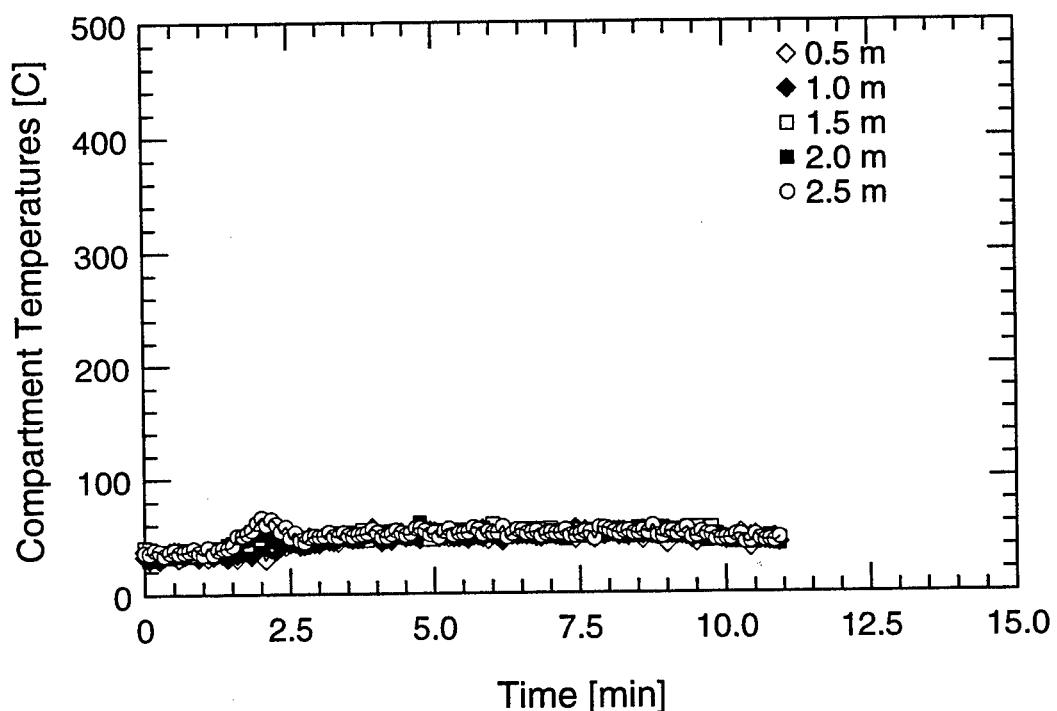
Water Mist System Pressure

TEST #20

B-123



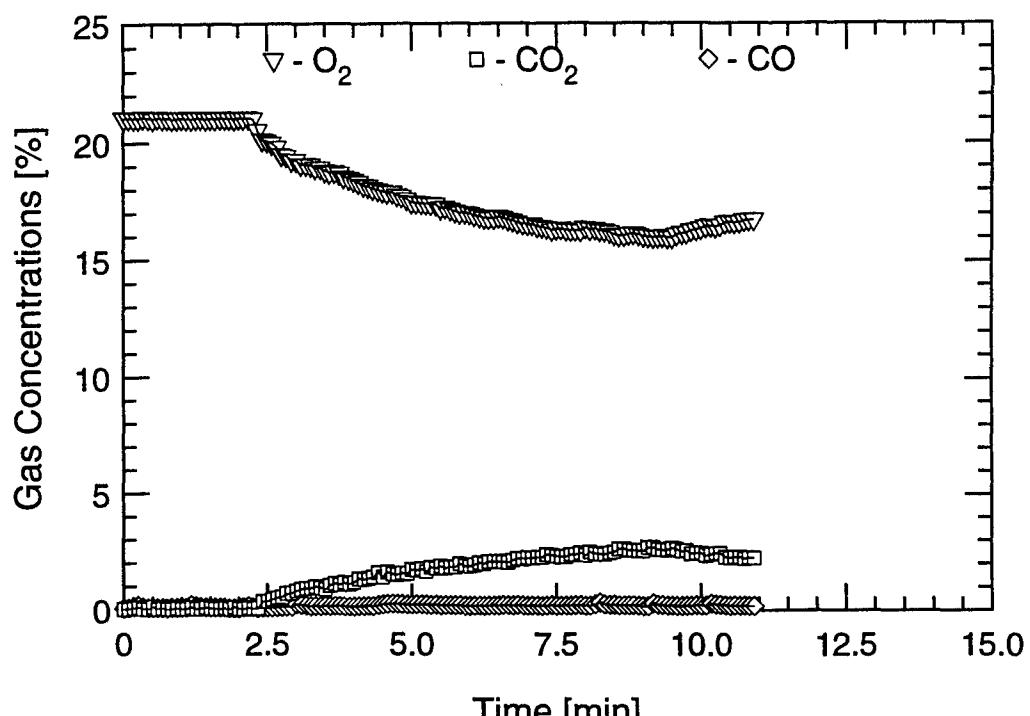
Aft Tree



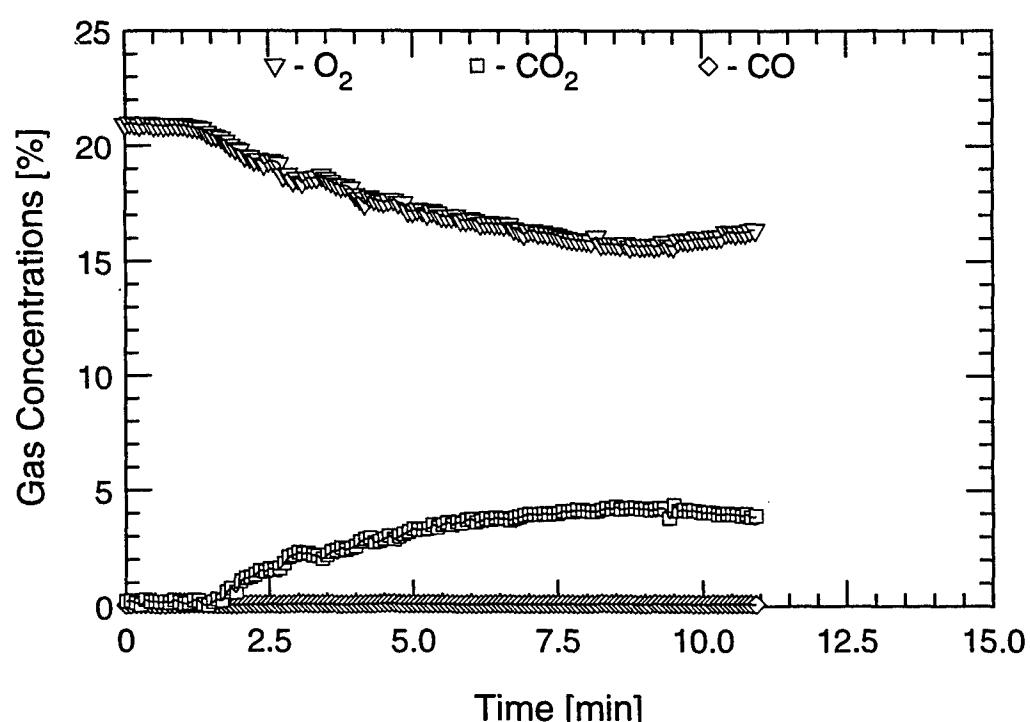
Forward Tree

TEST #21

B-124



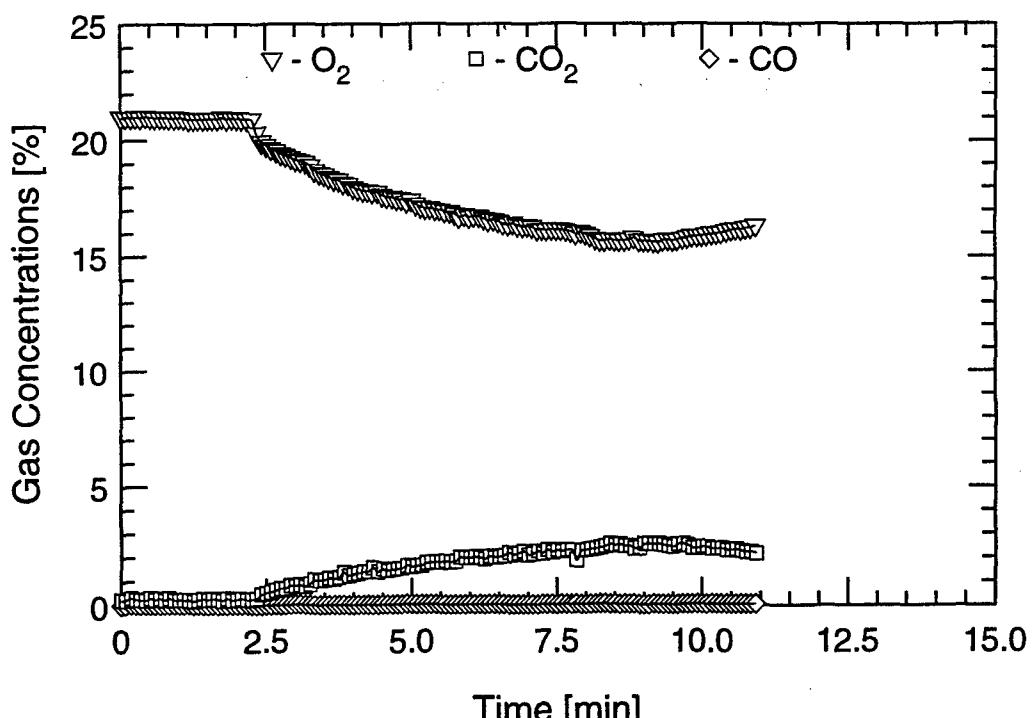
Aft Tree (Low)



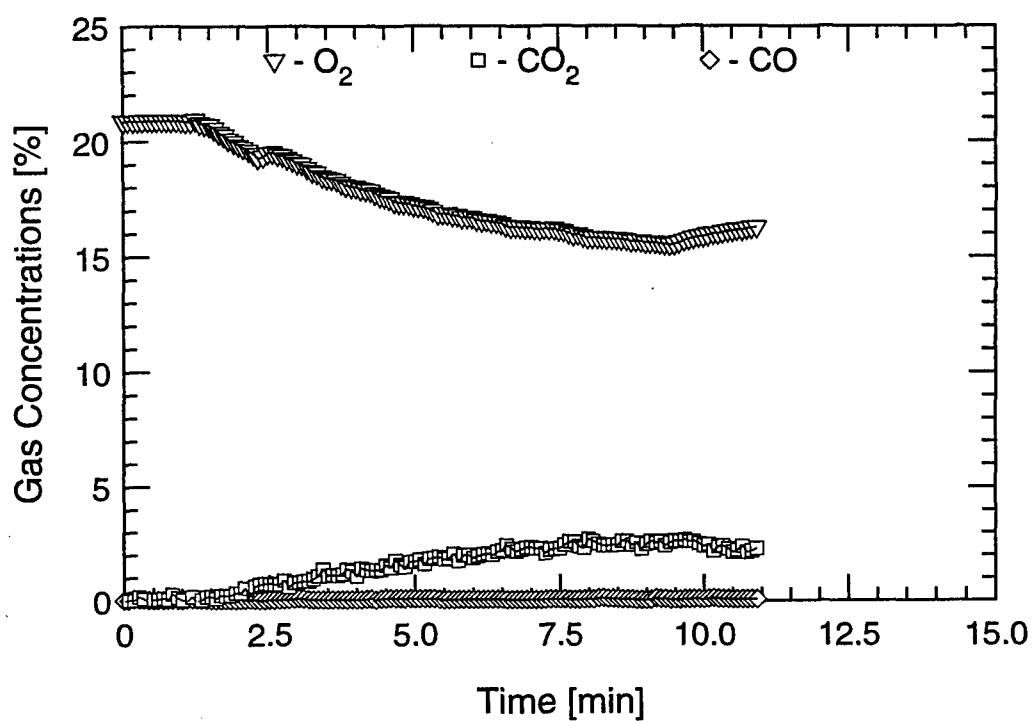
Aft Tree (High)

TEST #21

B-125



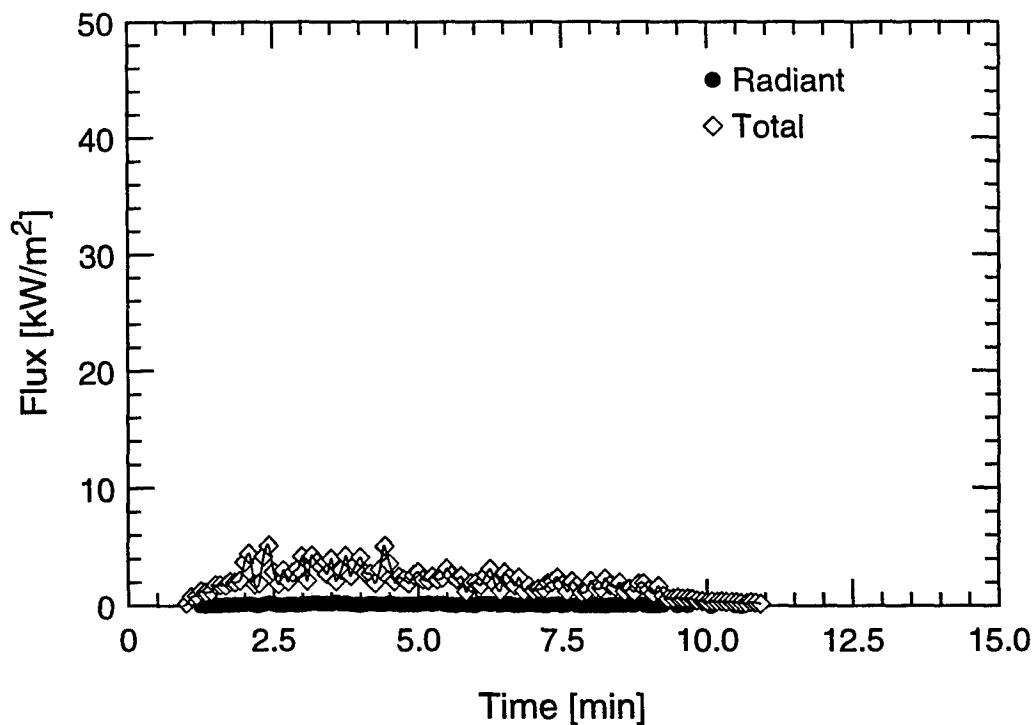
Forward Tree (Low)



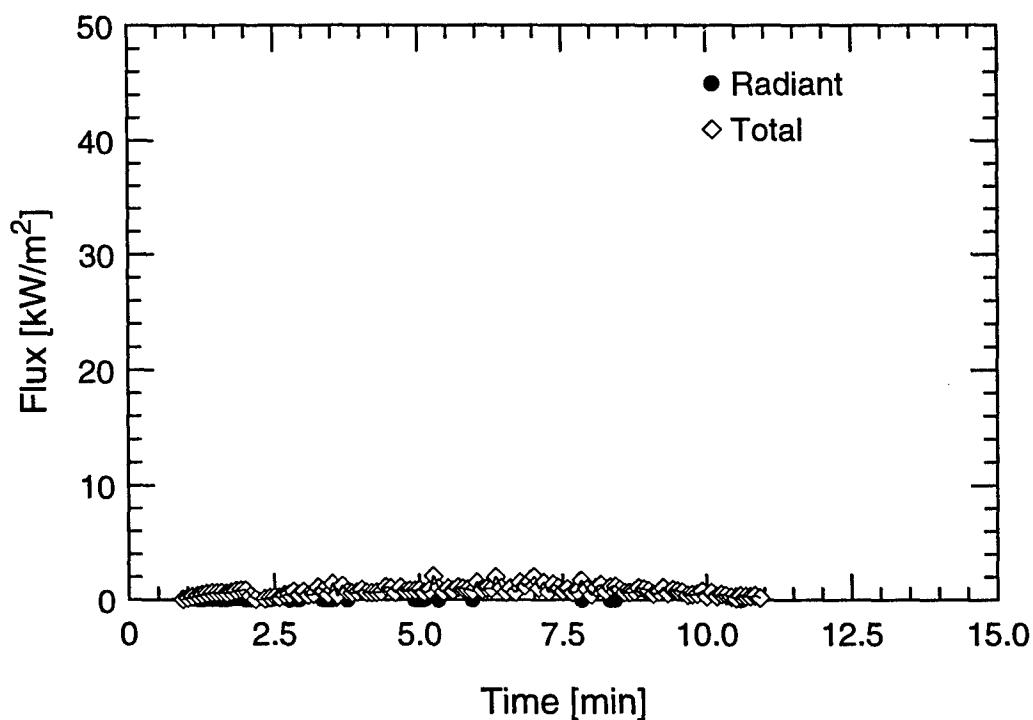
Forward Tree (High)

TEST #21

B-126



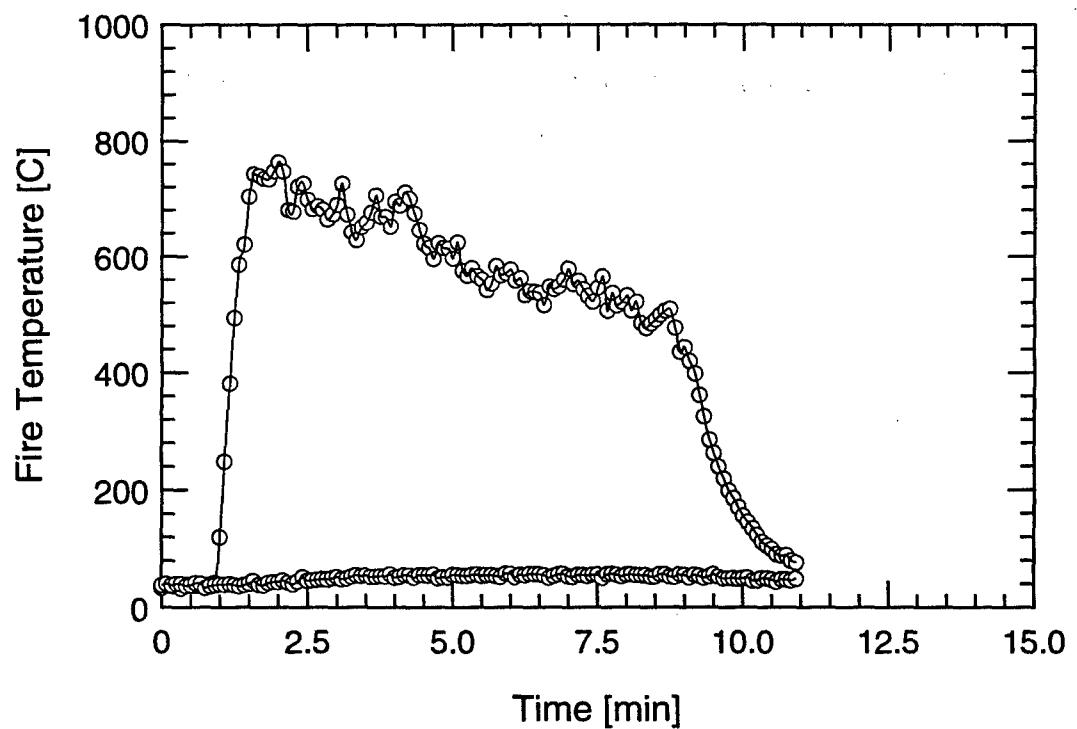
Overhead



Forward Bulkhead

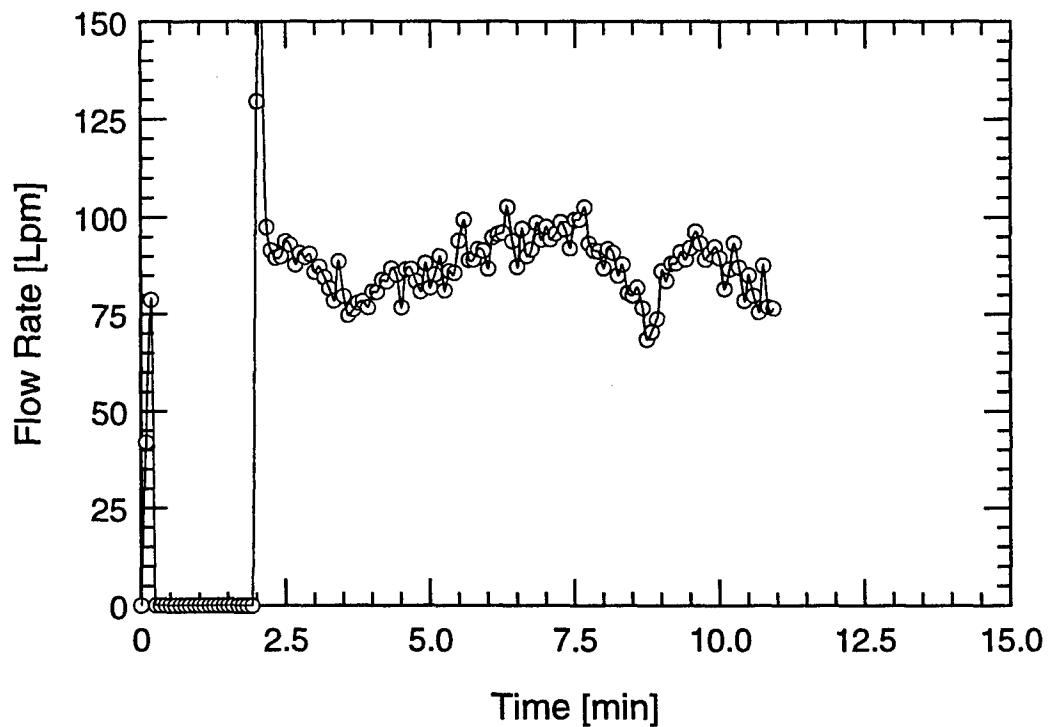
TEST #21

B-127

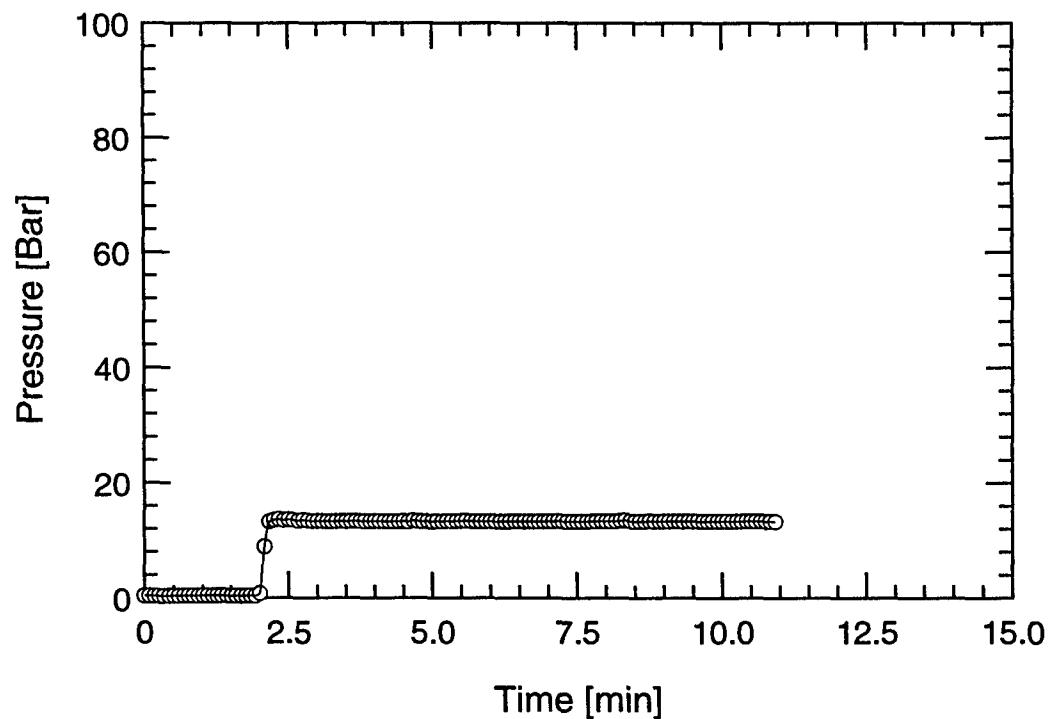


TEST #21

B-128



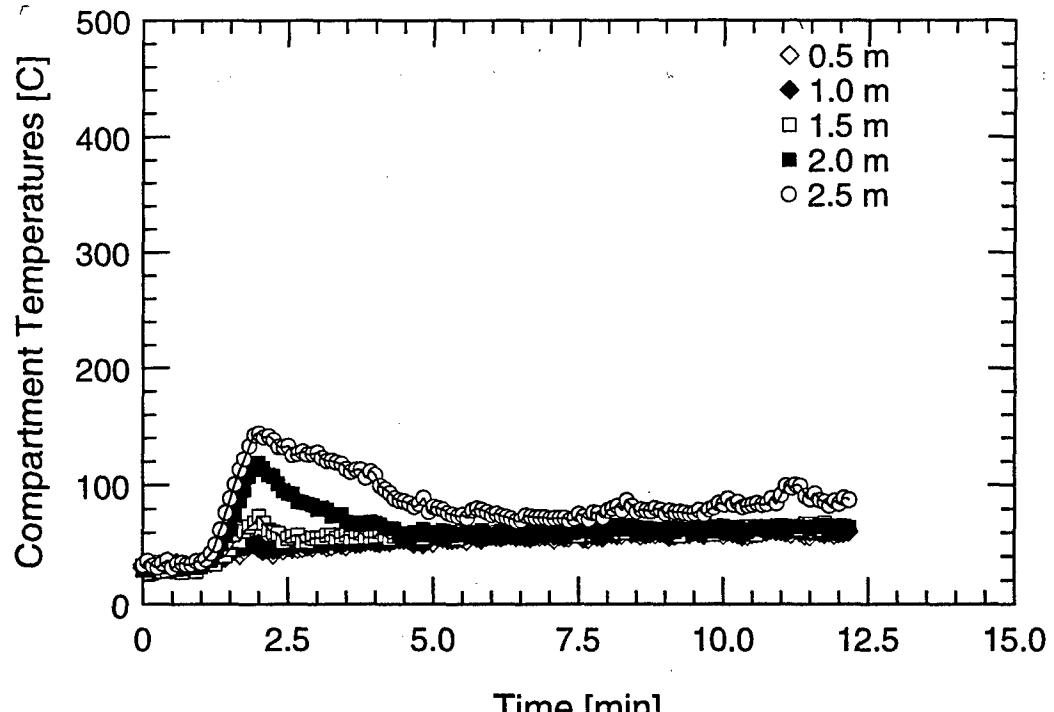
Water Mist System Flow Rate



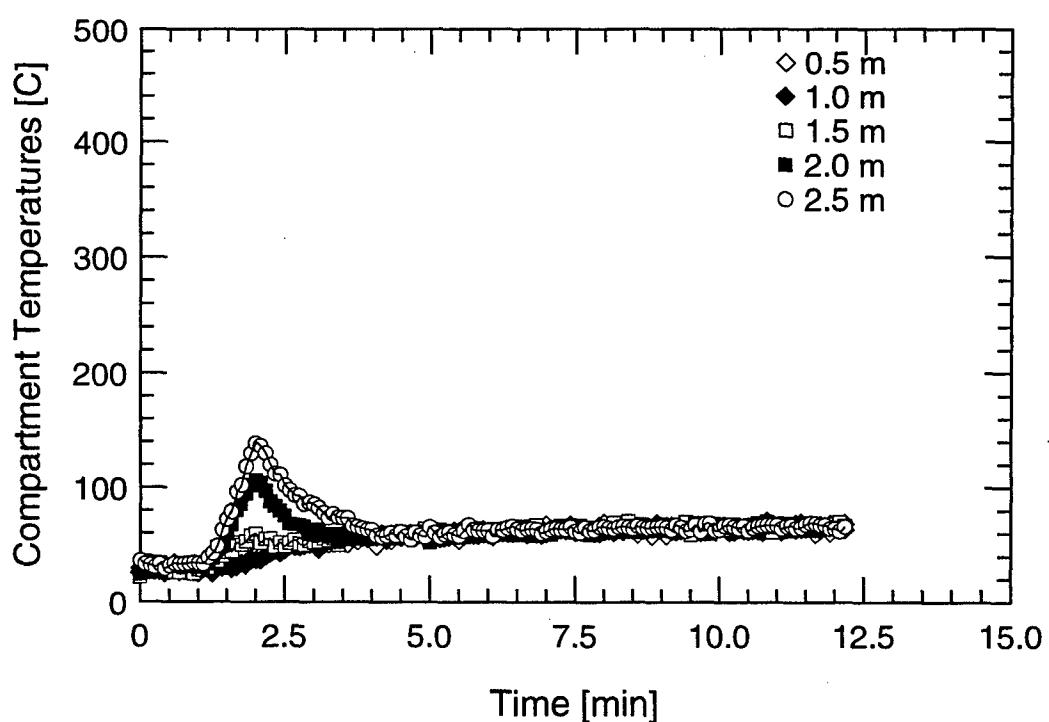
Water Mist System Pressure

TEST #21

B-129

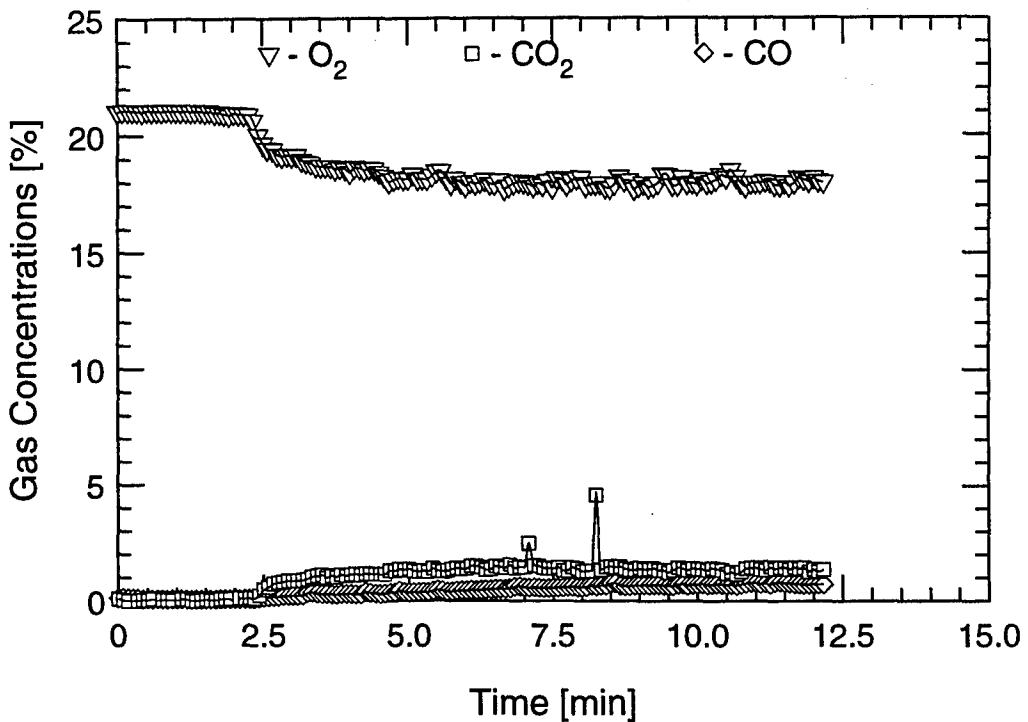


Aft Tree

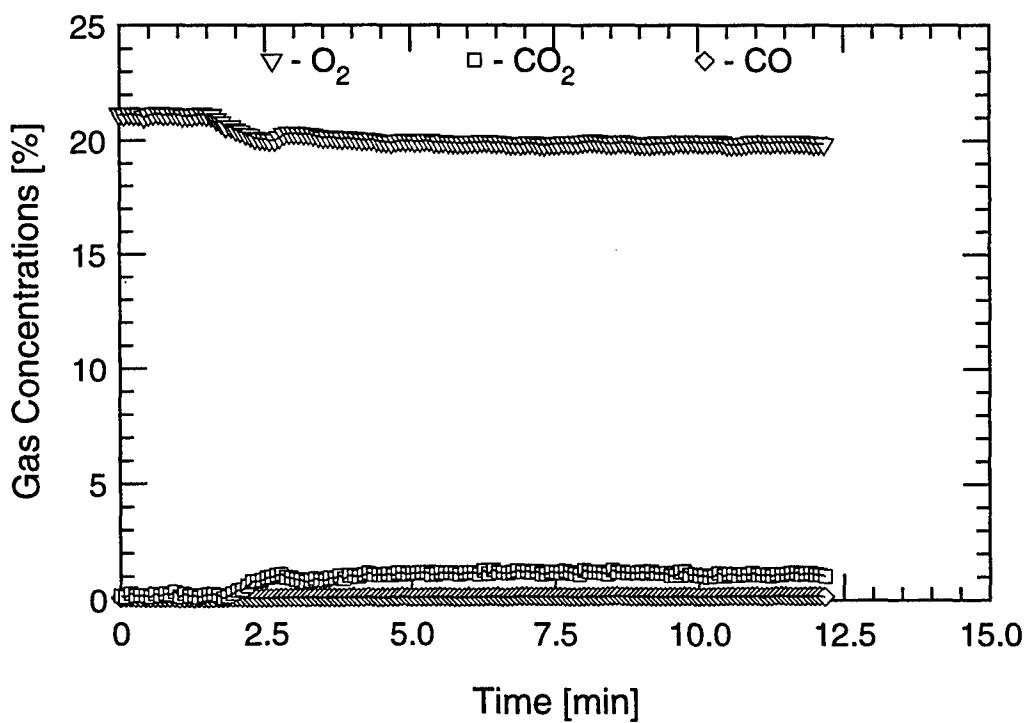


Forward Tree

TEST #22



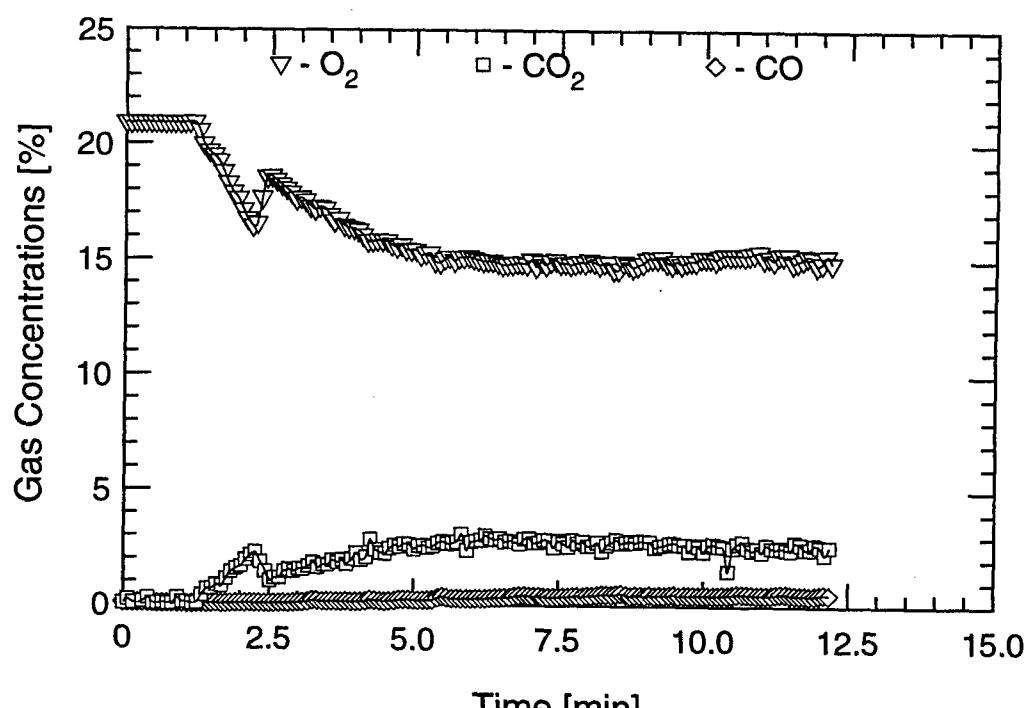
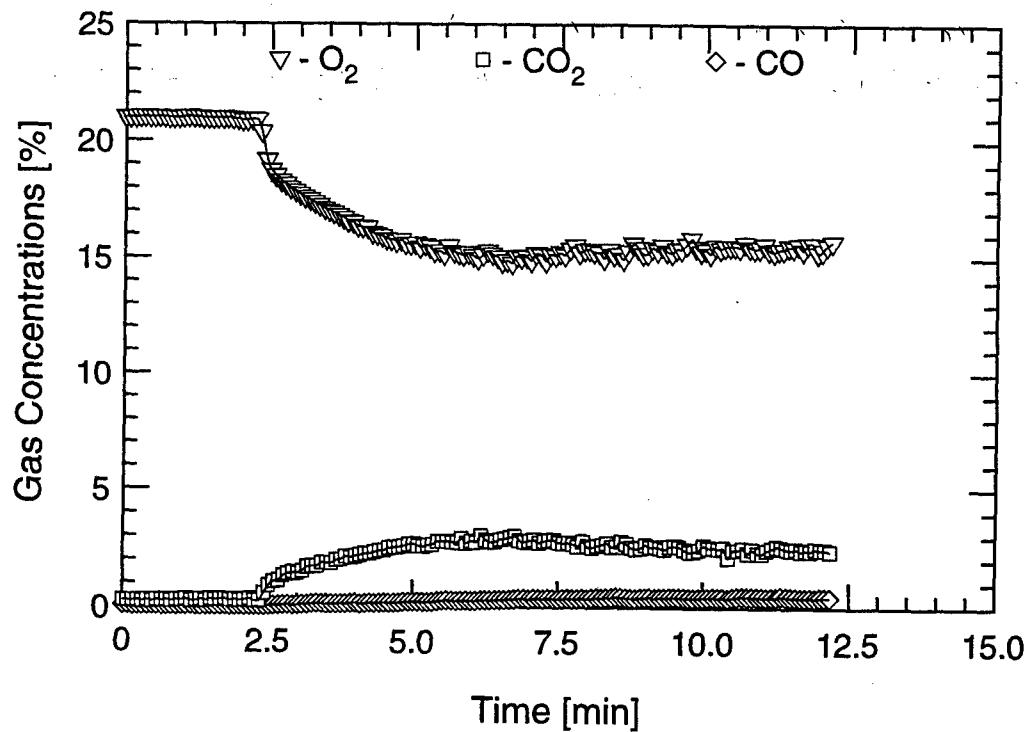
Aft Tree (Low)



Aft Tree (High)

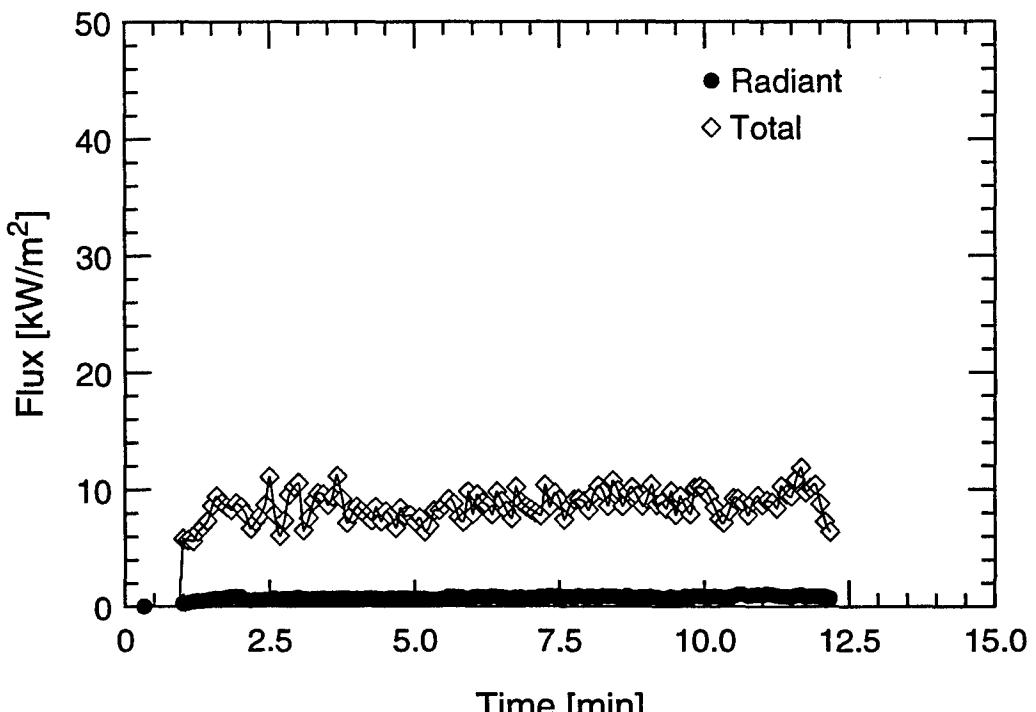
TEST #22

B-131

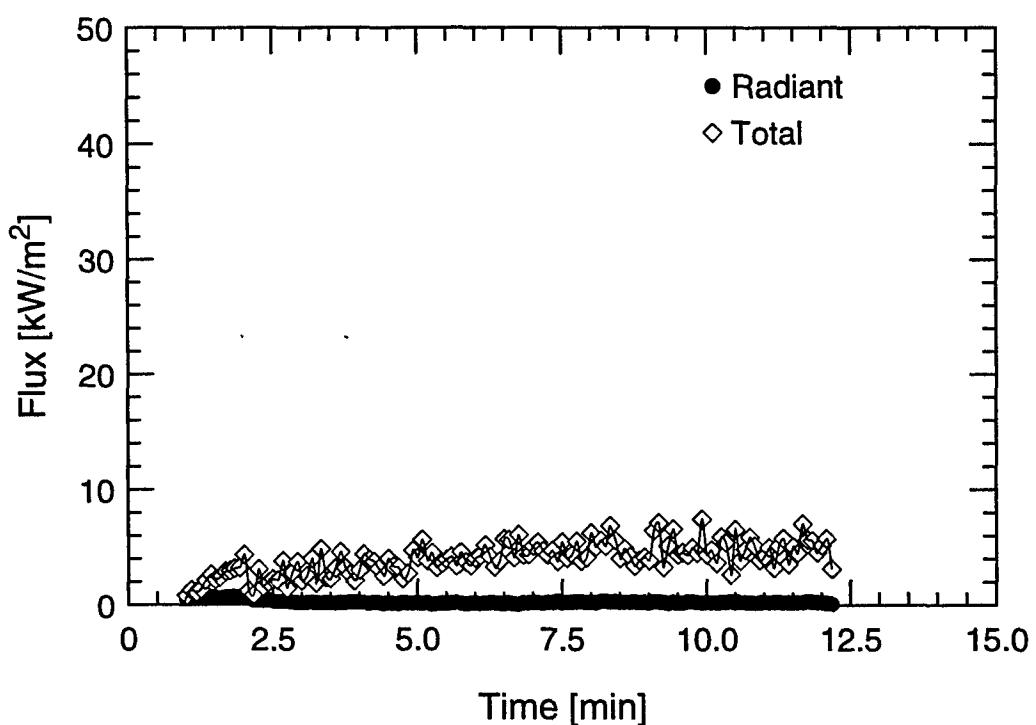


TEST #22

B-132



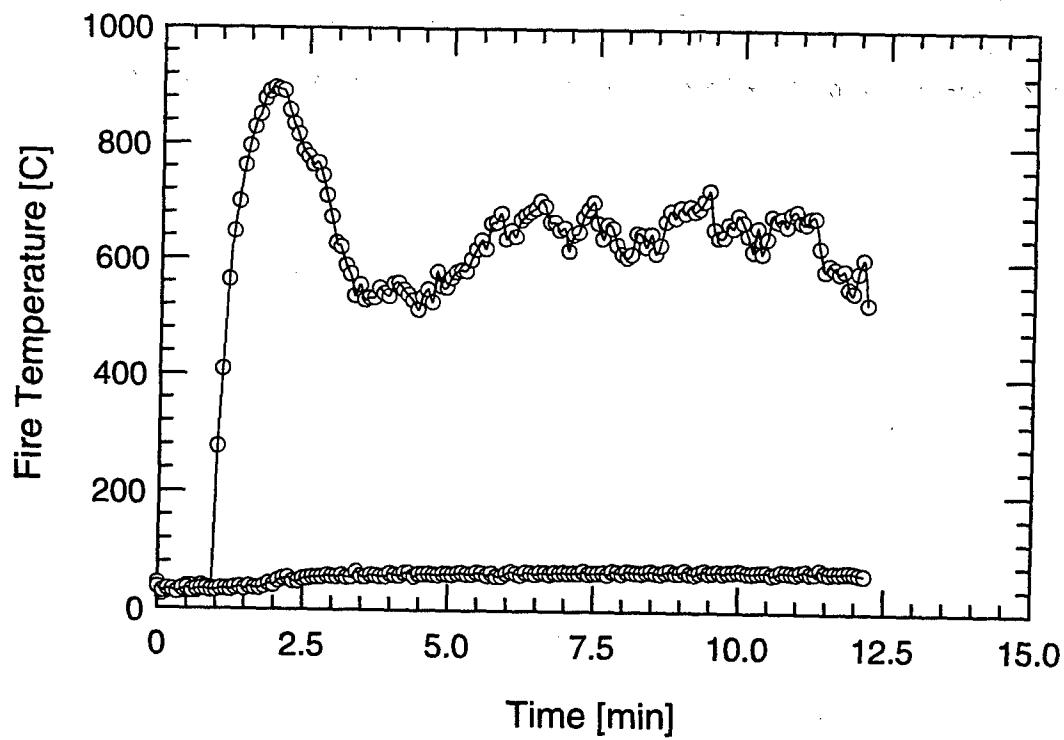
Overhead



Forward Bulkhead

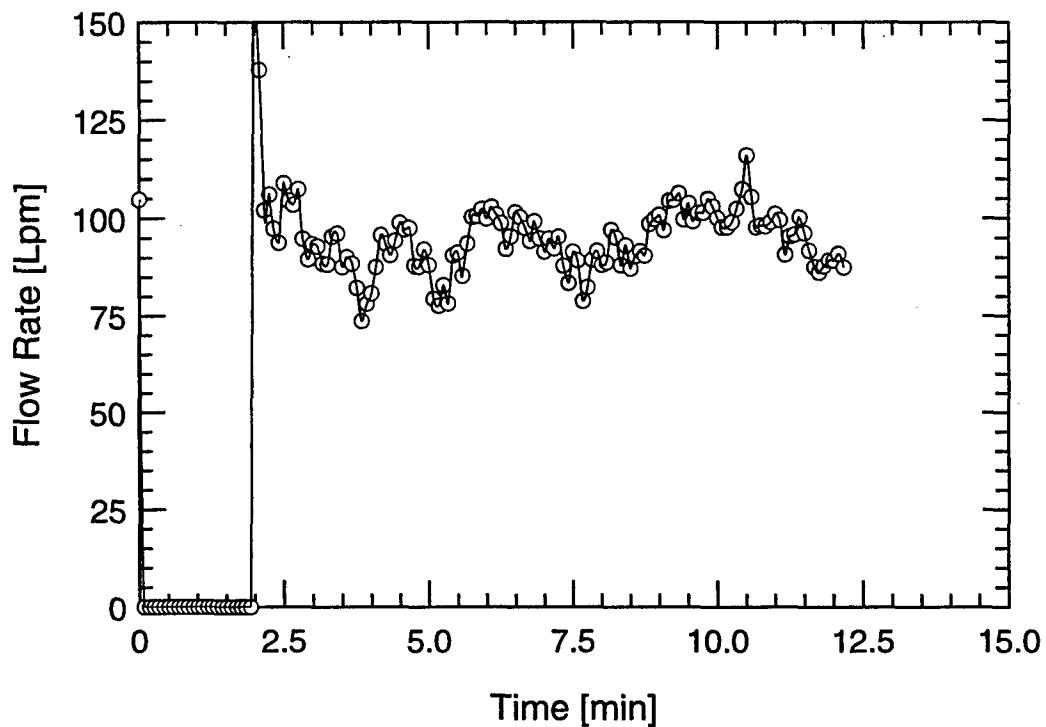
TEST #22

B-133

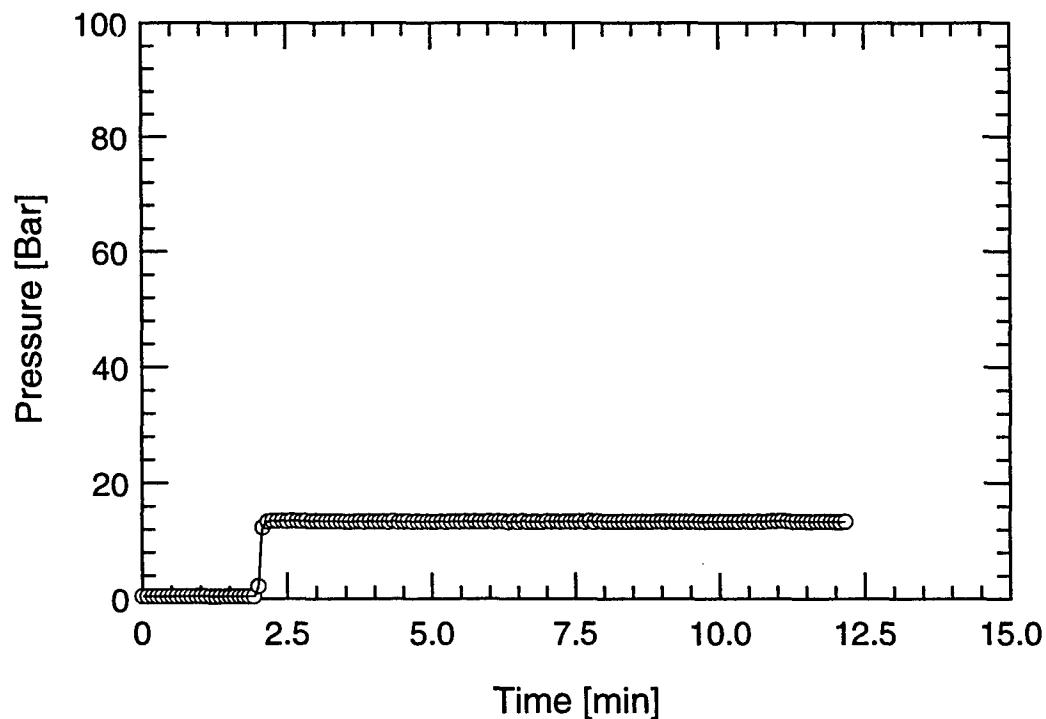


TEST #22

B-134



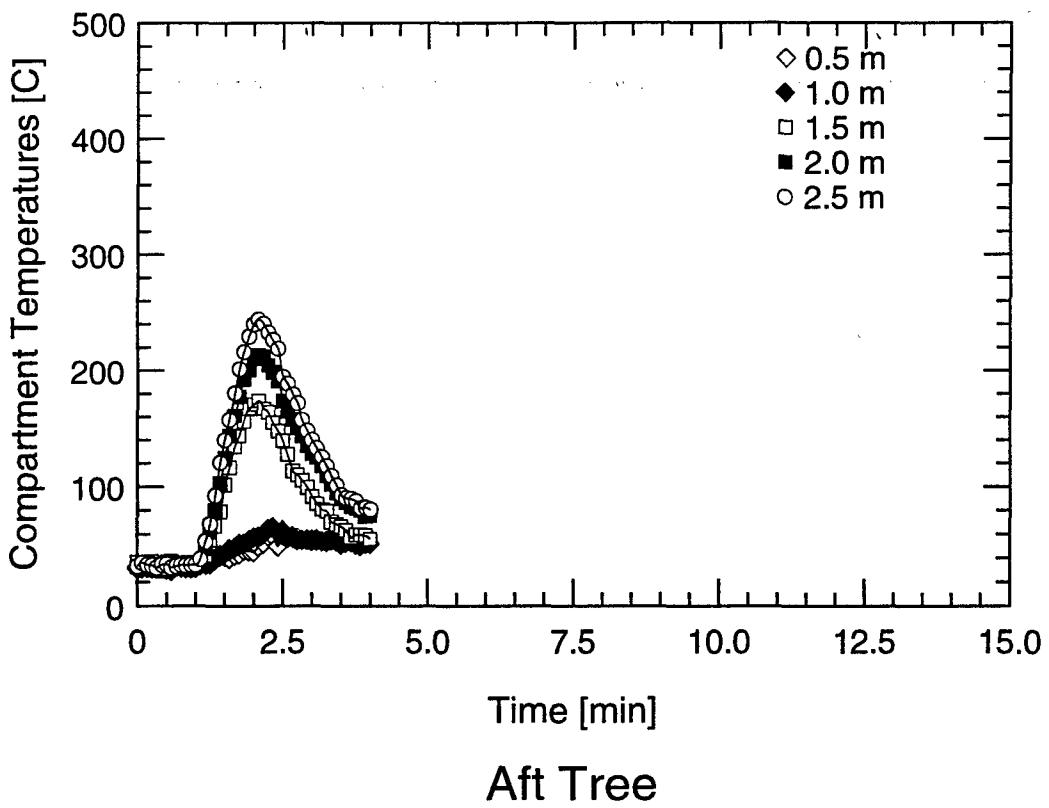
Water Mist System Flow Rate



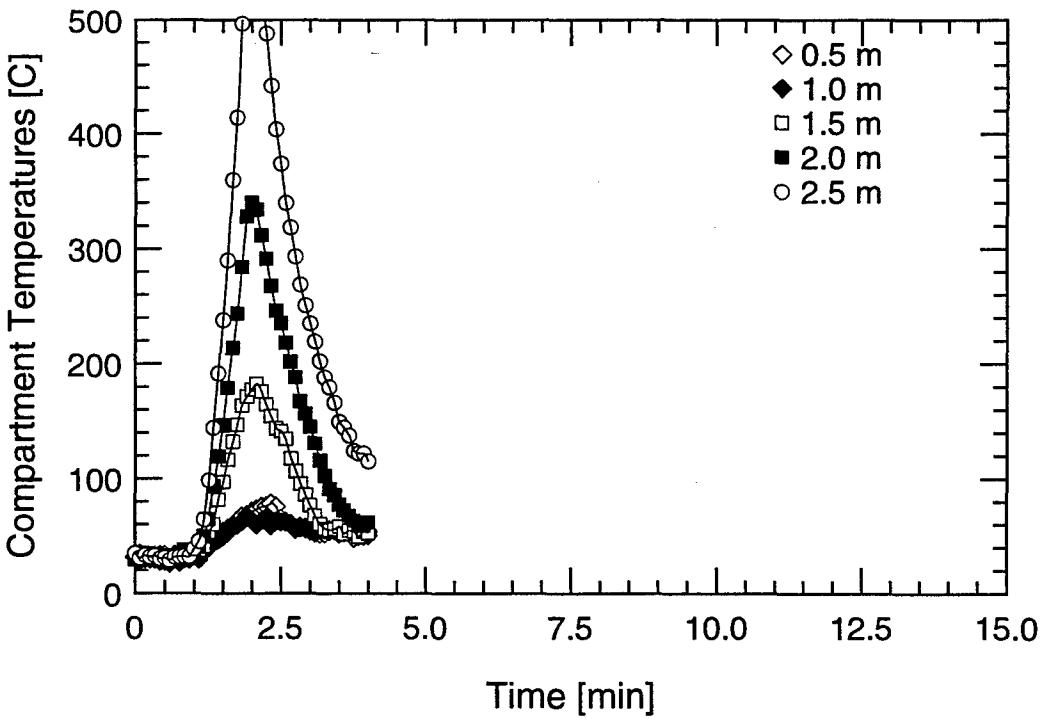
Water Mist System Pressure

TEST #22

B-135



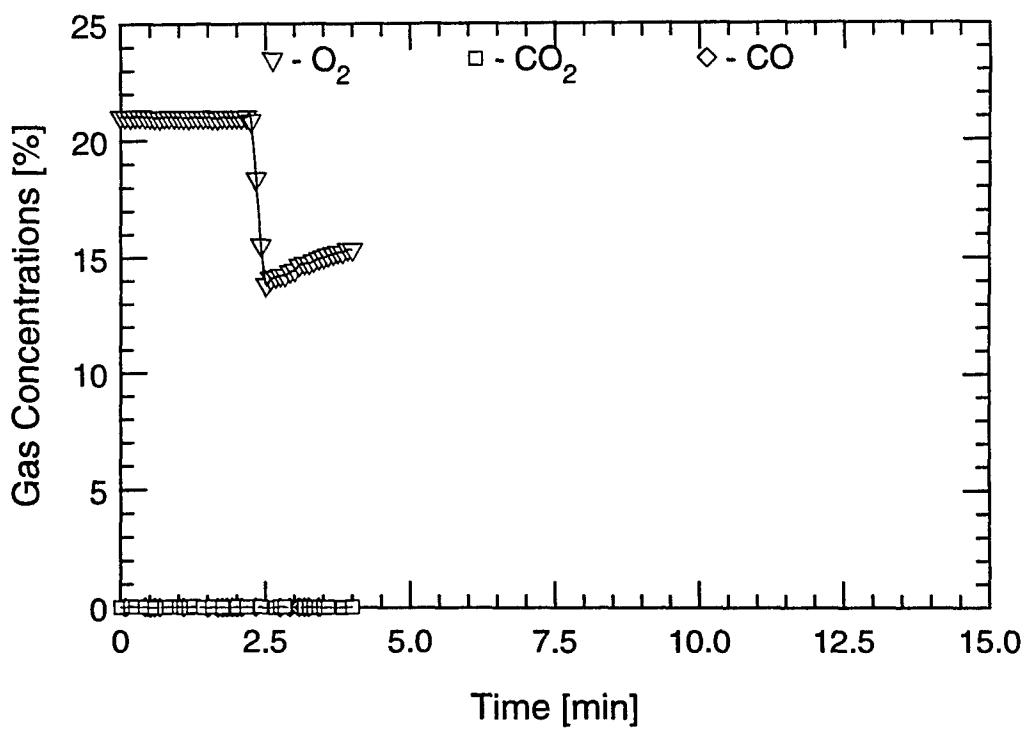
Aft Tree



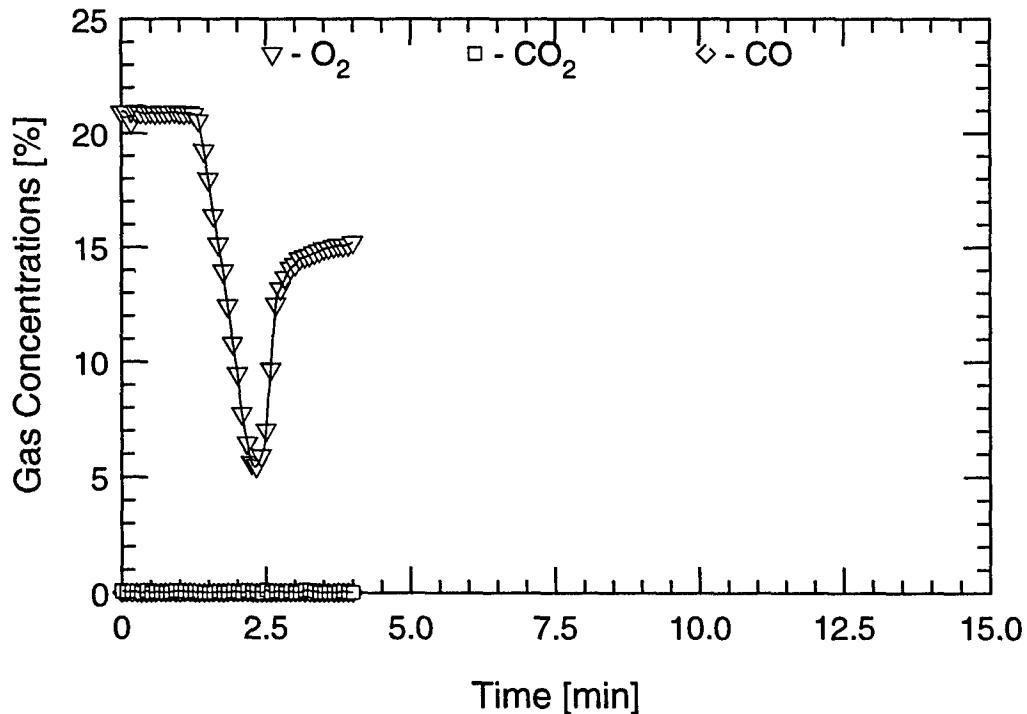
Forward Tree

TEST #23

B-136



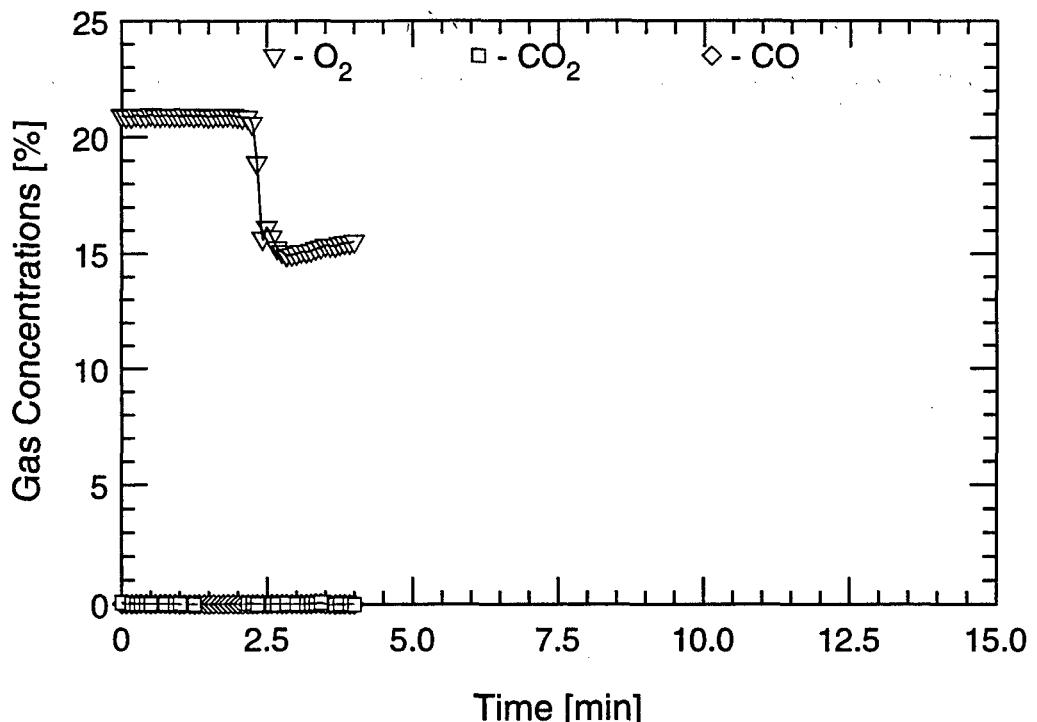
Aft Tree (Low)



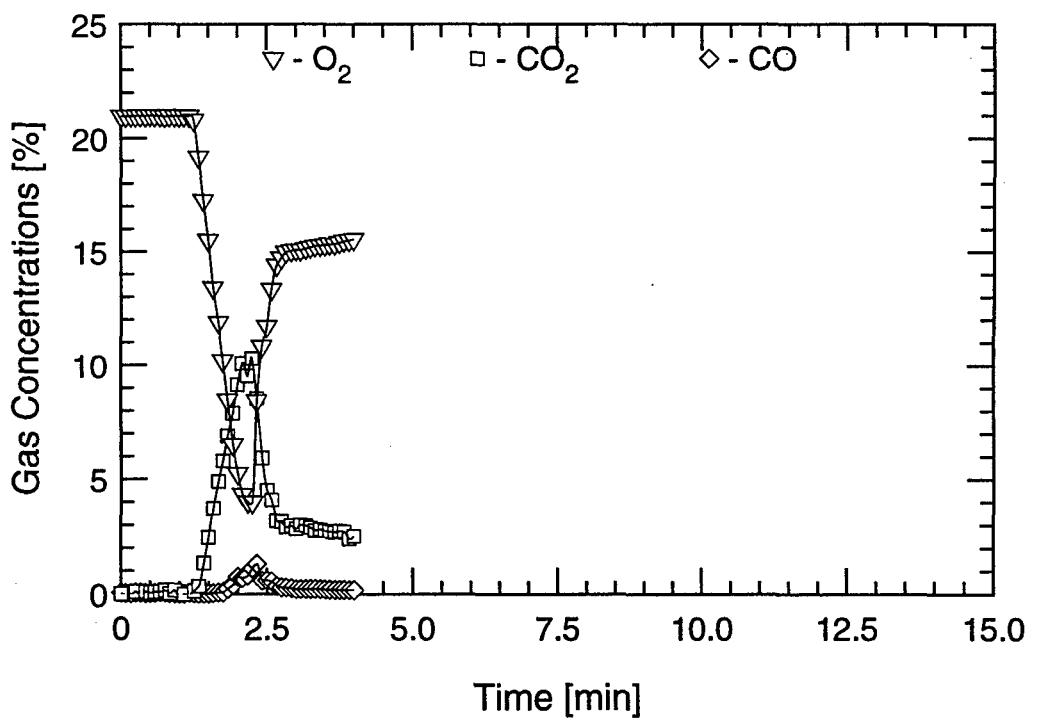
Aft Tree (High)

TEST #23

B-137



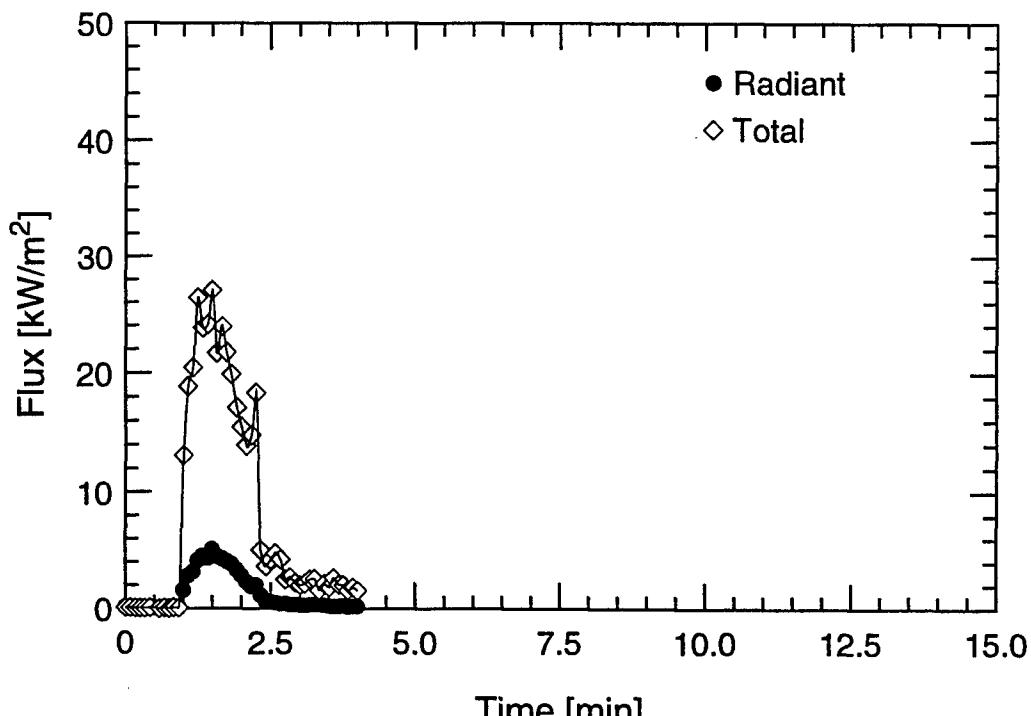
Forward Tree (Low)



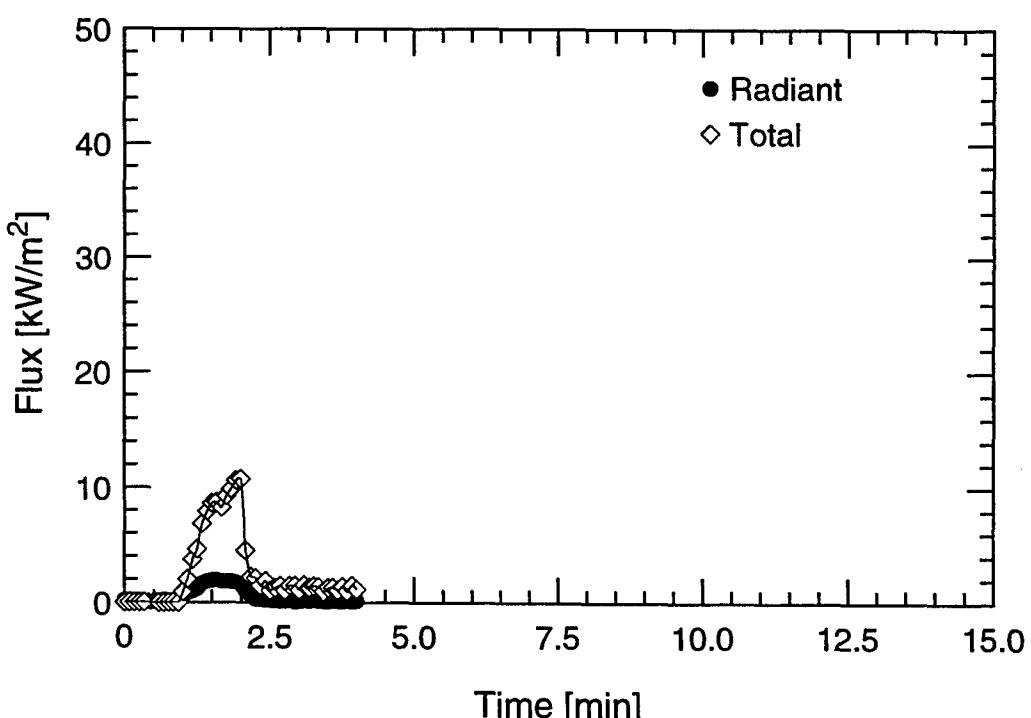
Forward Tree (High)

TEST #23

B-138

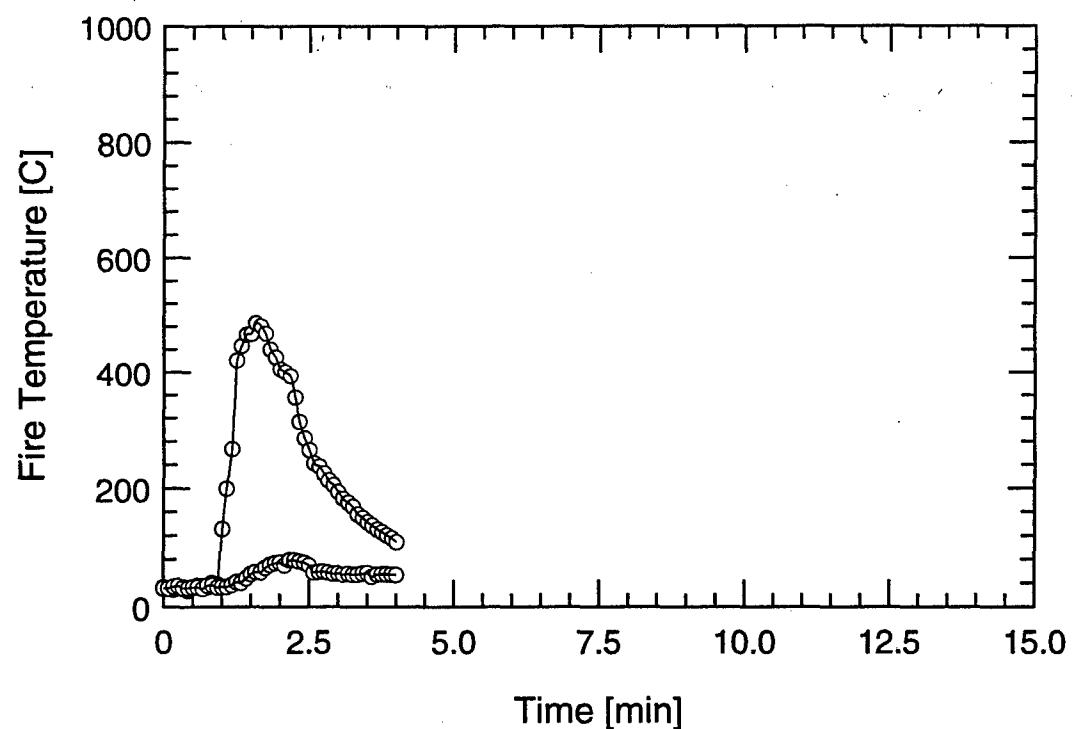


Overhead



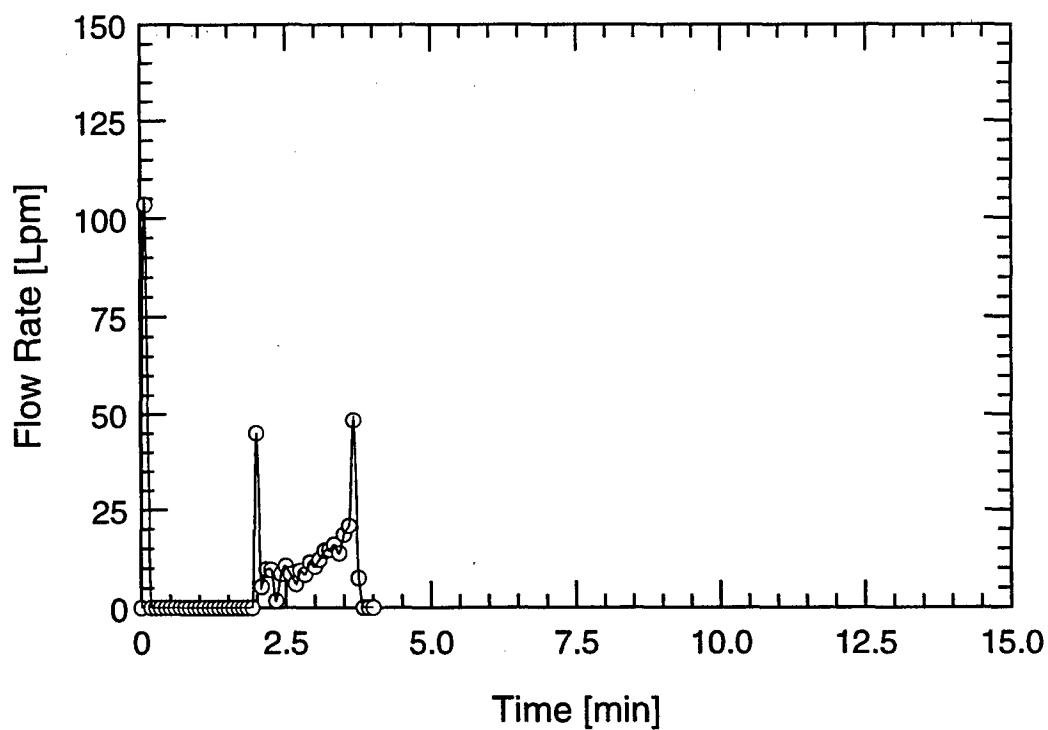
Forward Bulkhead

TEST #23

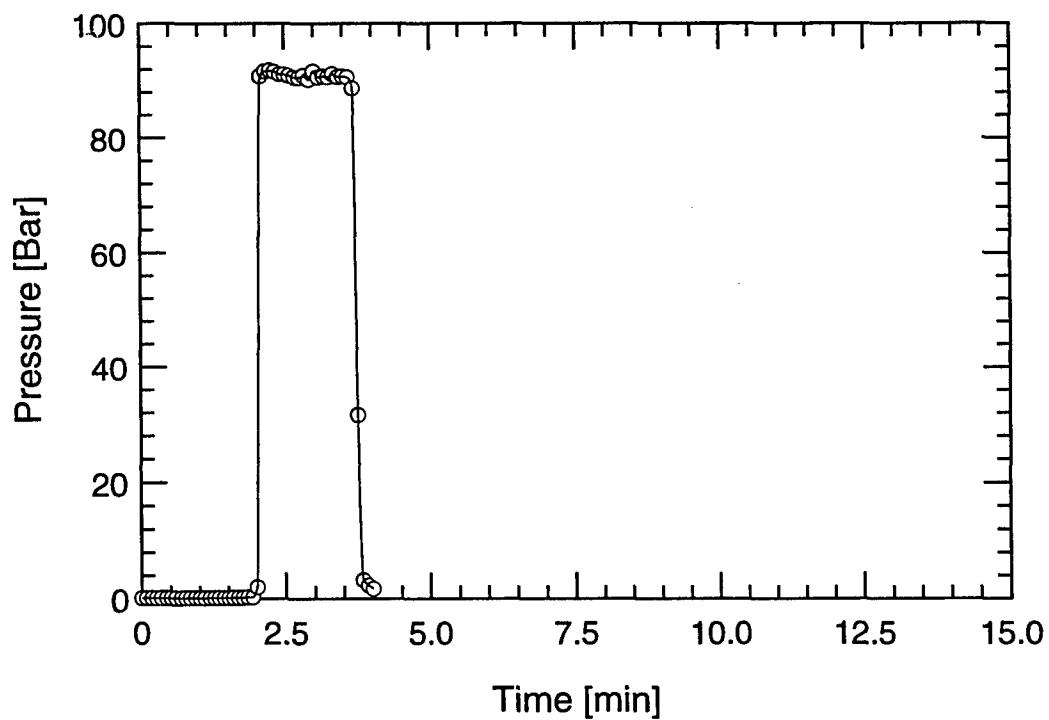


TEST #23

B-140

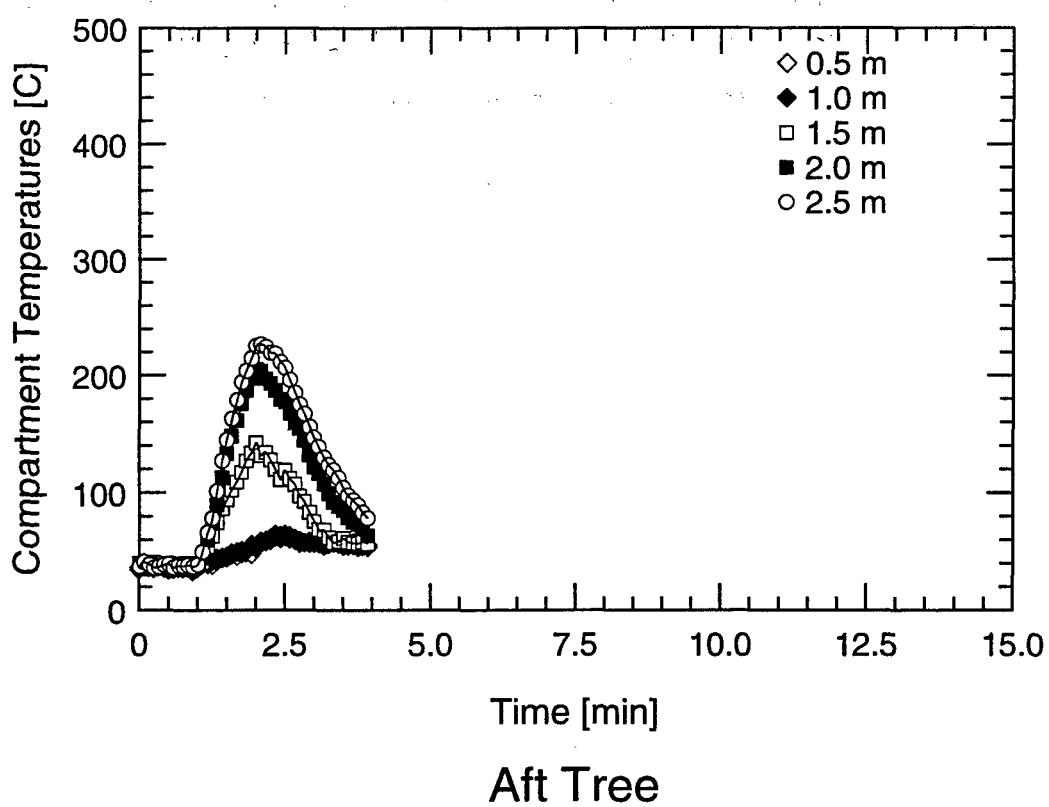


Water Mist System Flow Rate

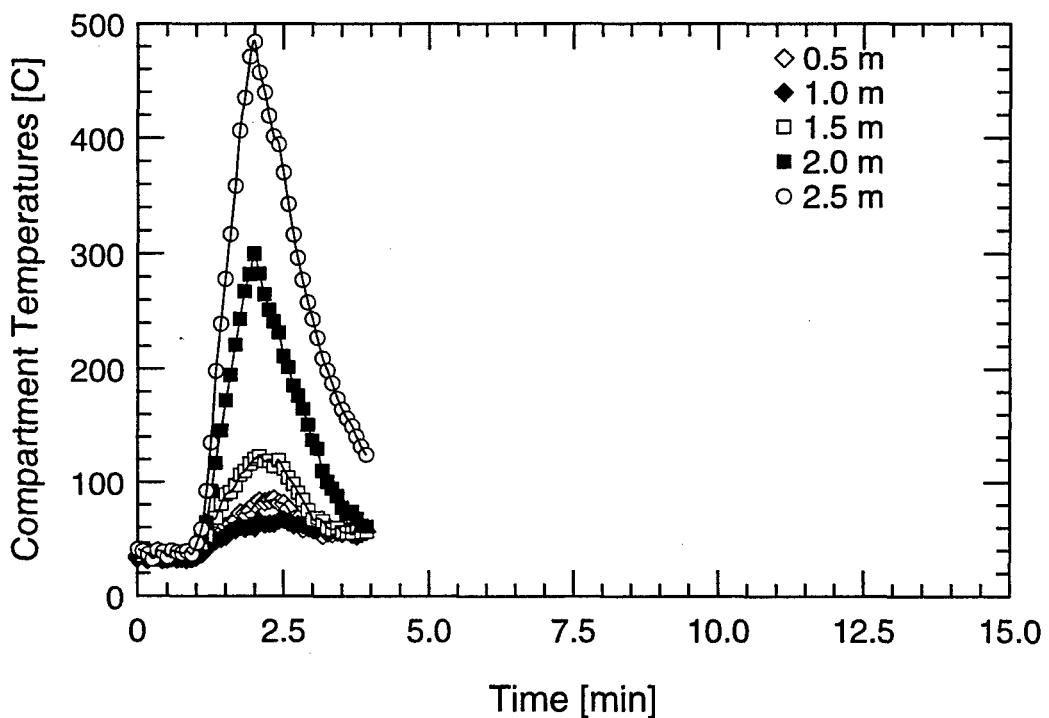


Water Mist System Pressure

TEST #23



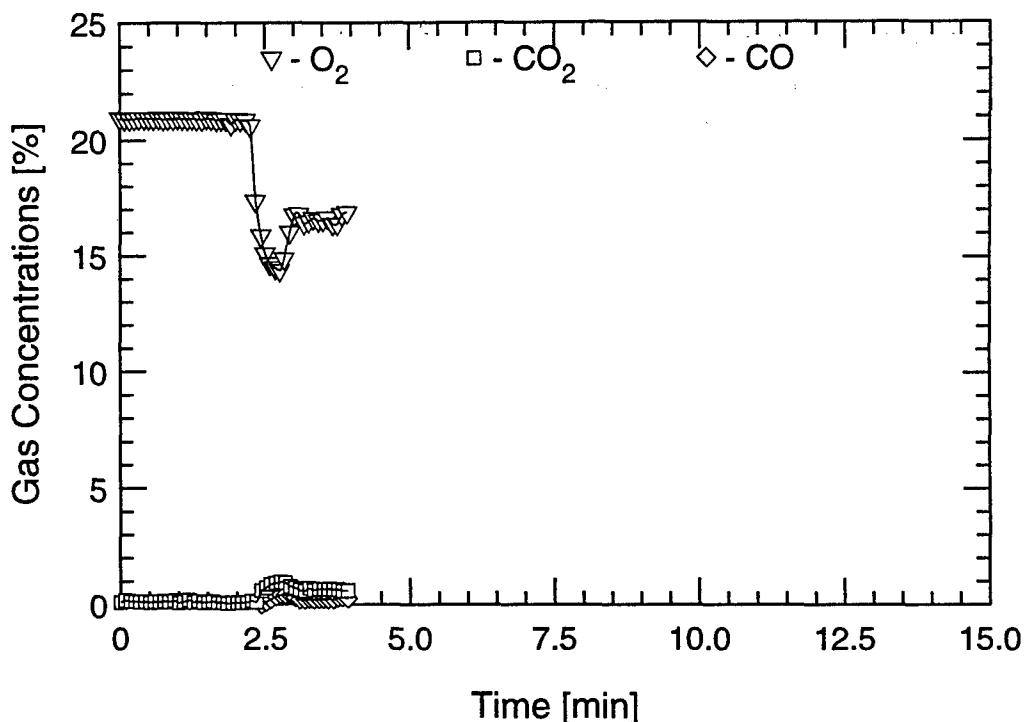
Aft Tree



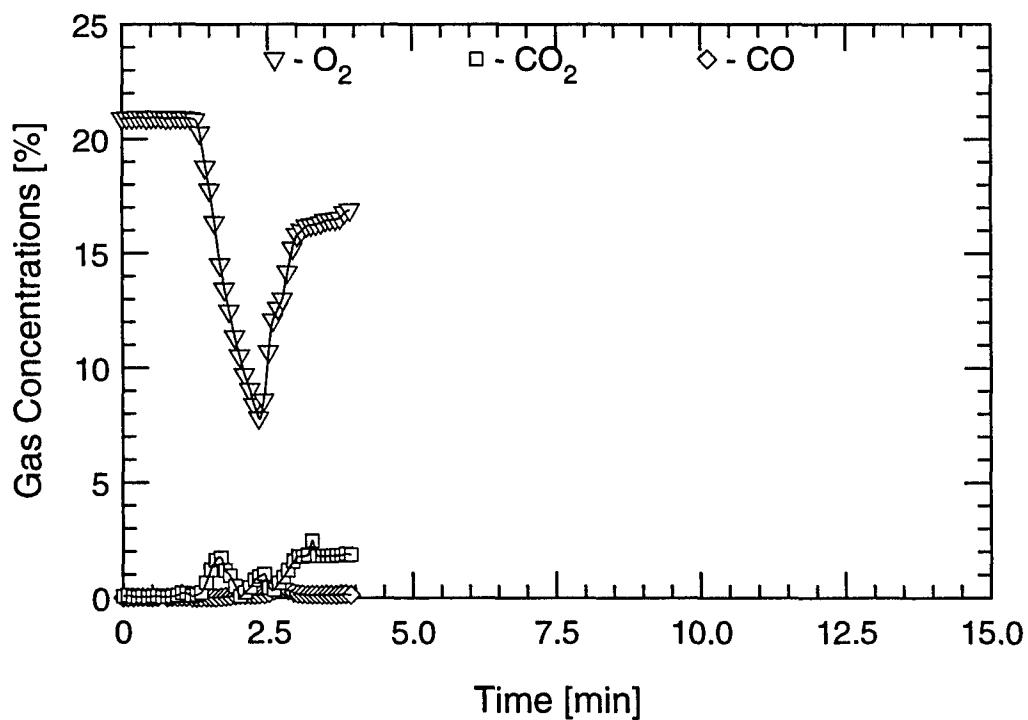
Forward Tree

TEST #24

B-142

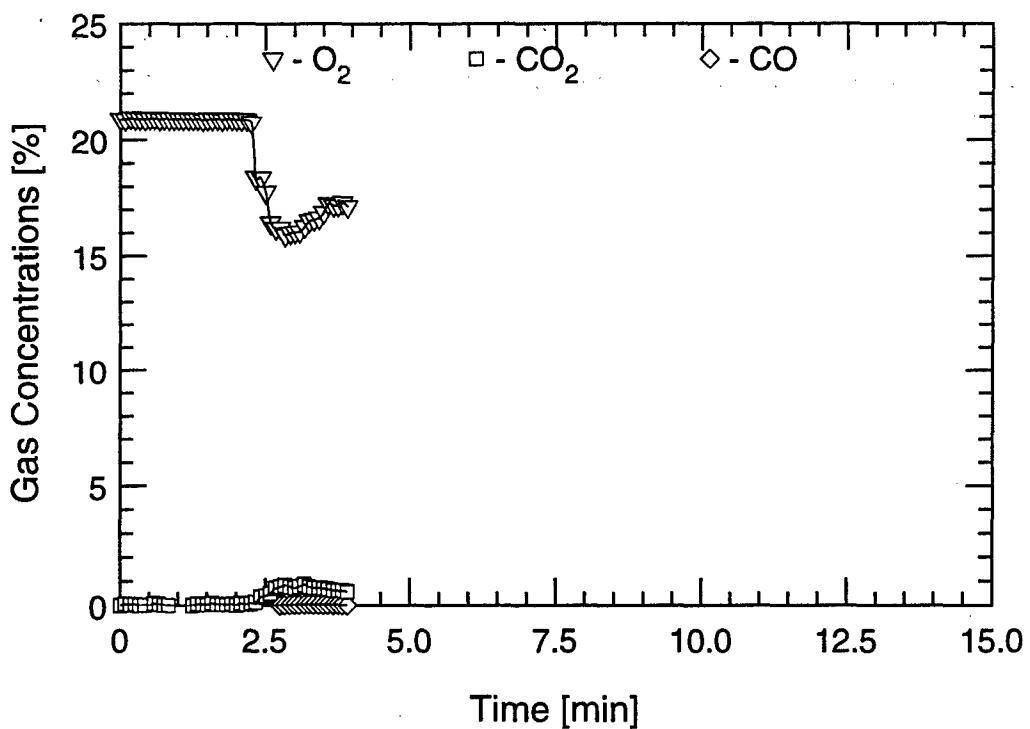


Aft Tree (Low)

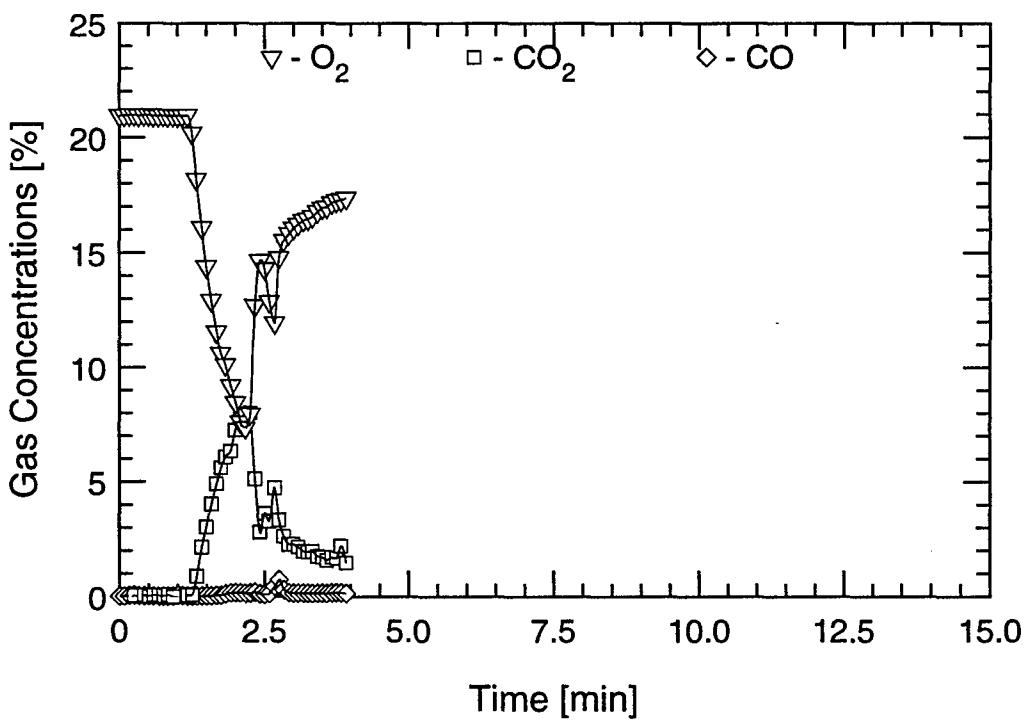


Aft Tree (High)

TEST #24



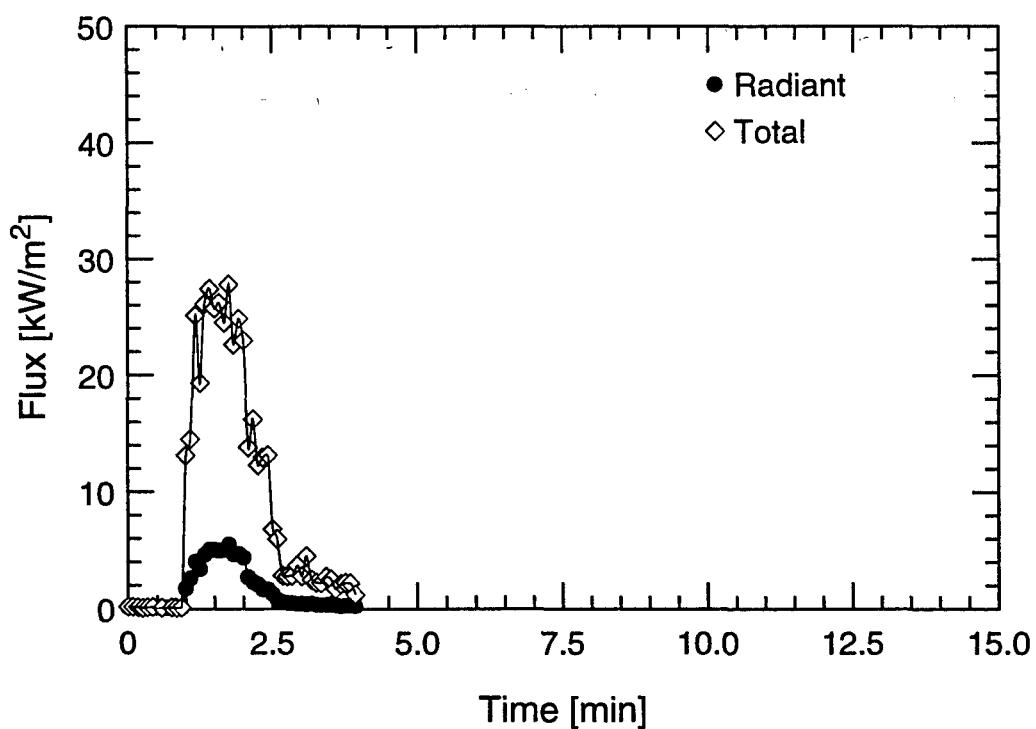
Forward Tree (Low)



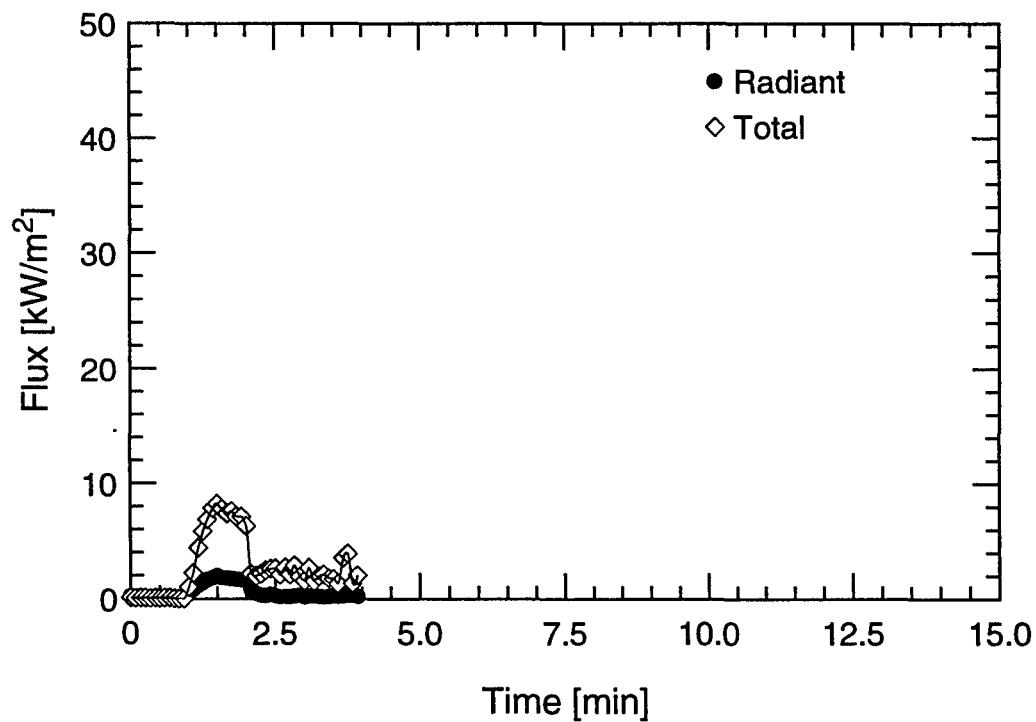
Forward Tree (High)

TEST #24

B-144

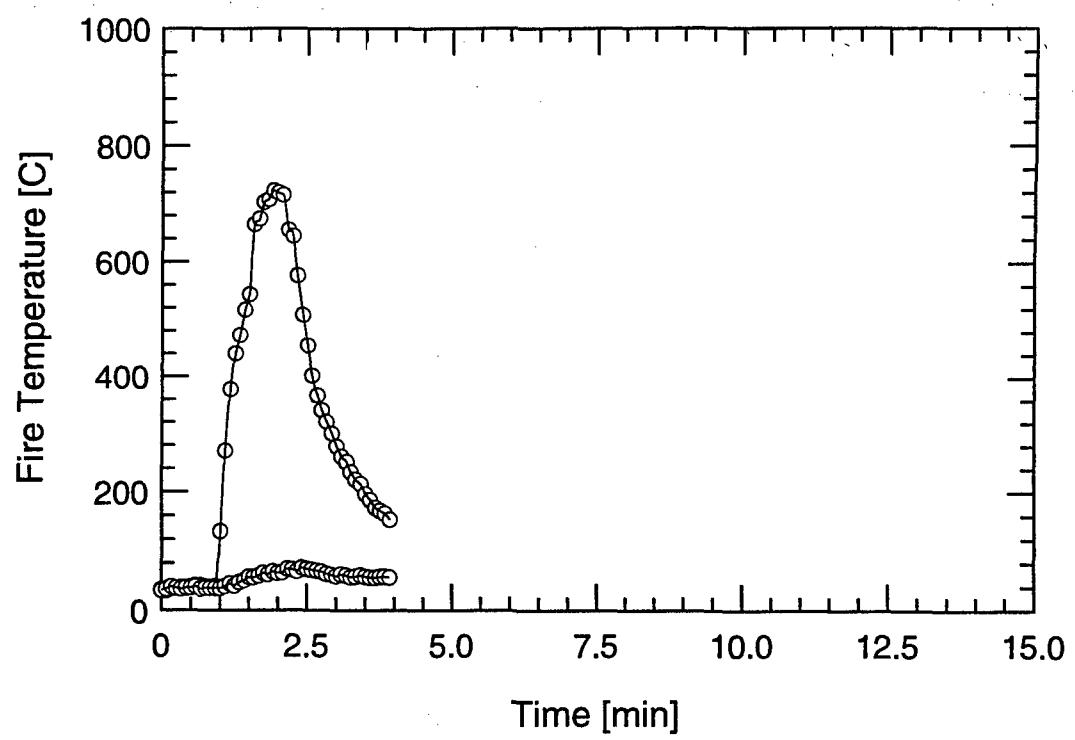


Overhead



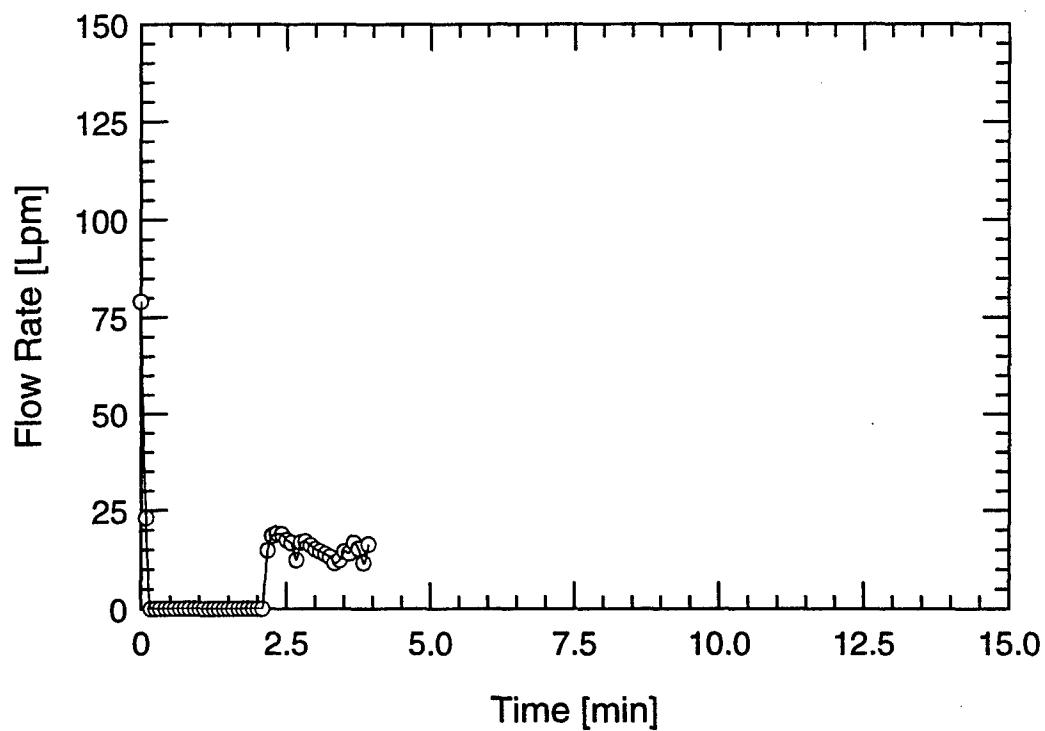
Forward Bulkhead

TEST #24

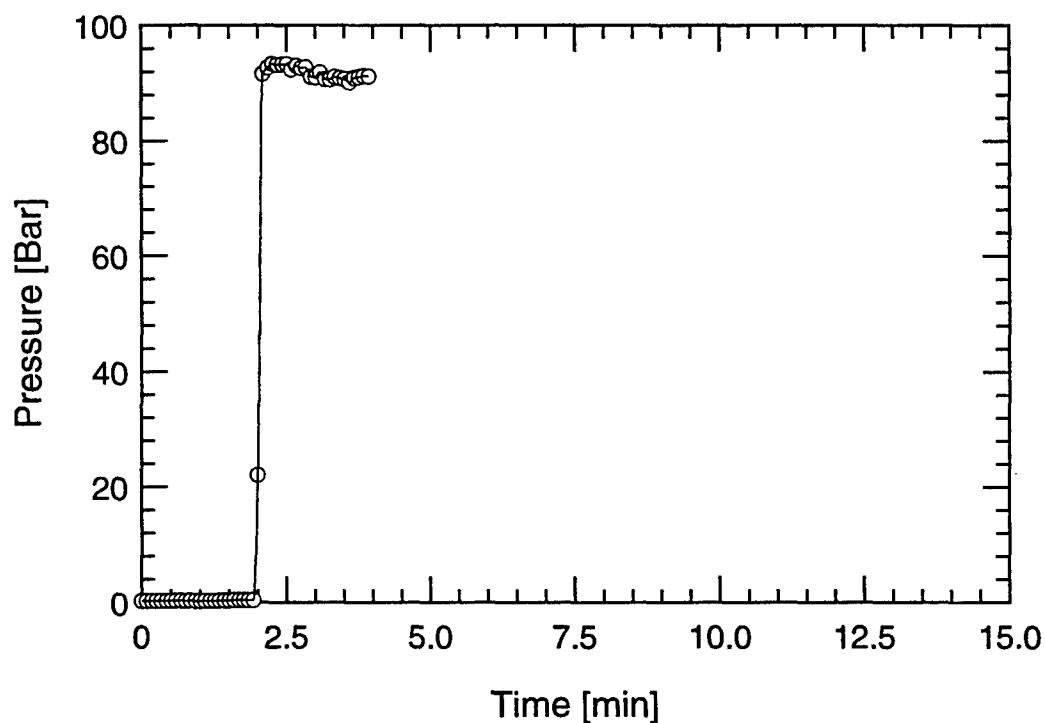


TEST #24

B-146

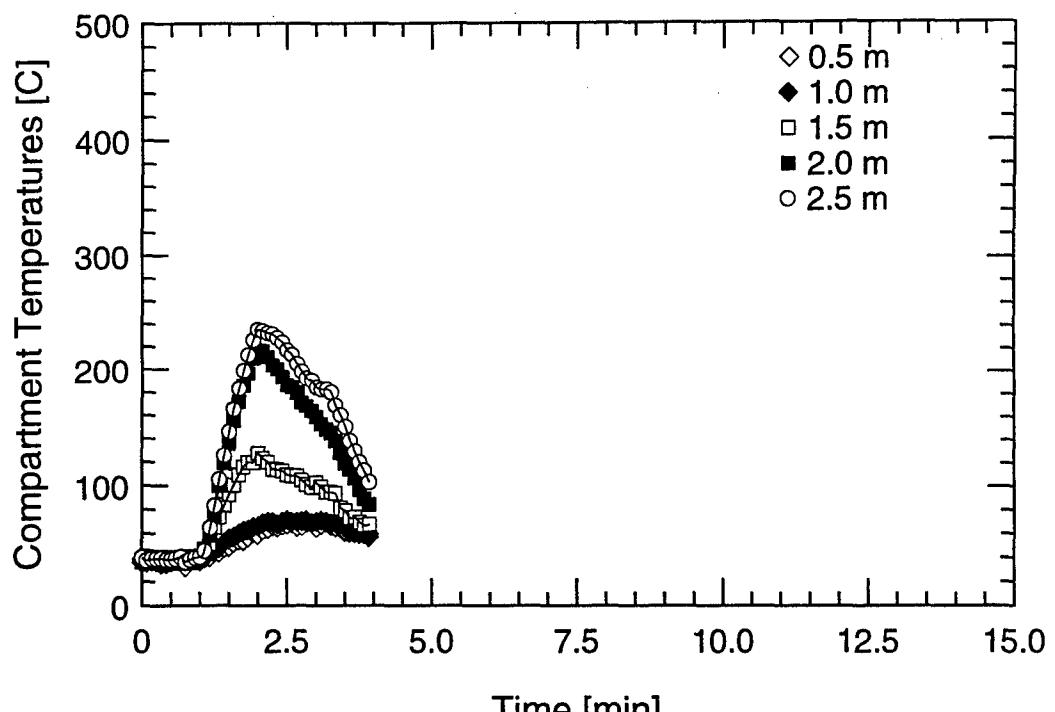


Water Mist System Flow Rate

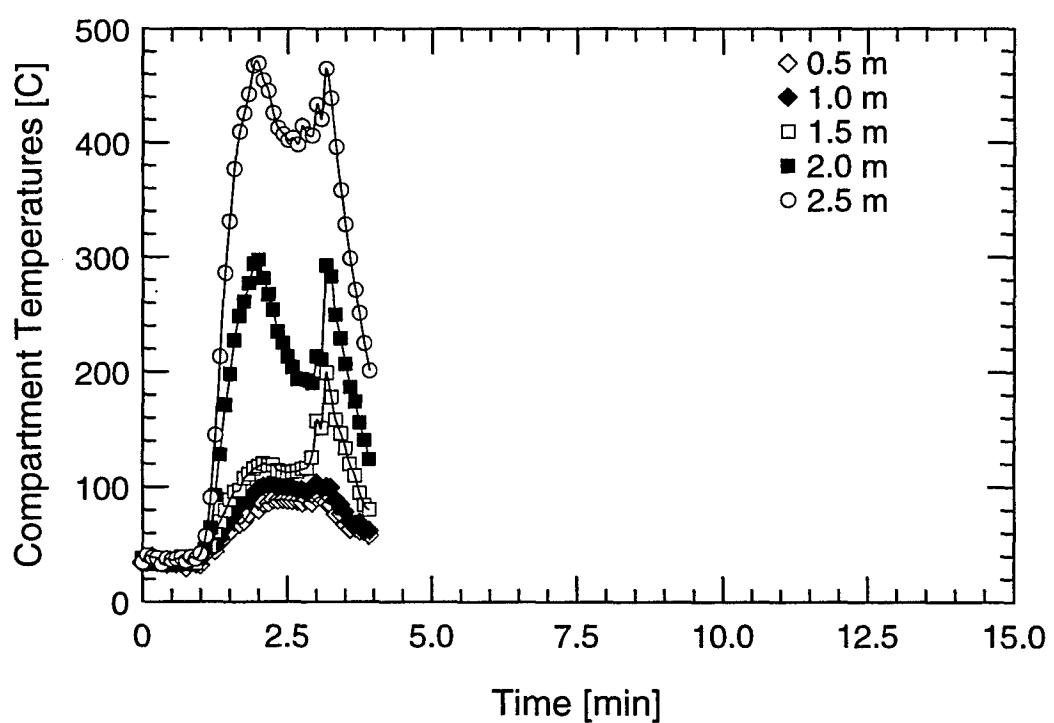


Water Mist System Pressure

TEST #24

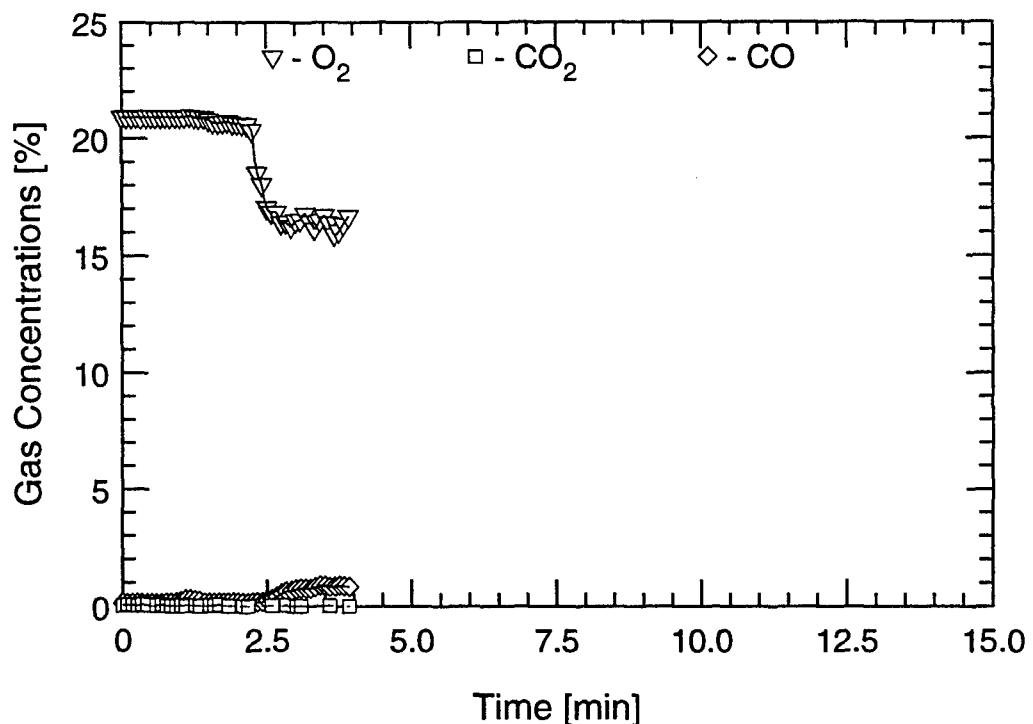


Aft Tree

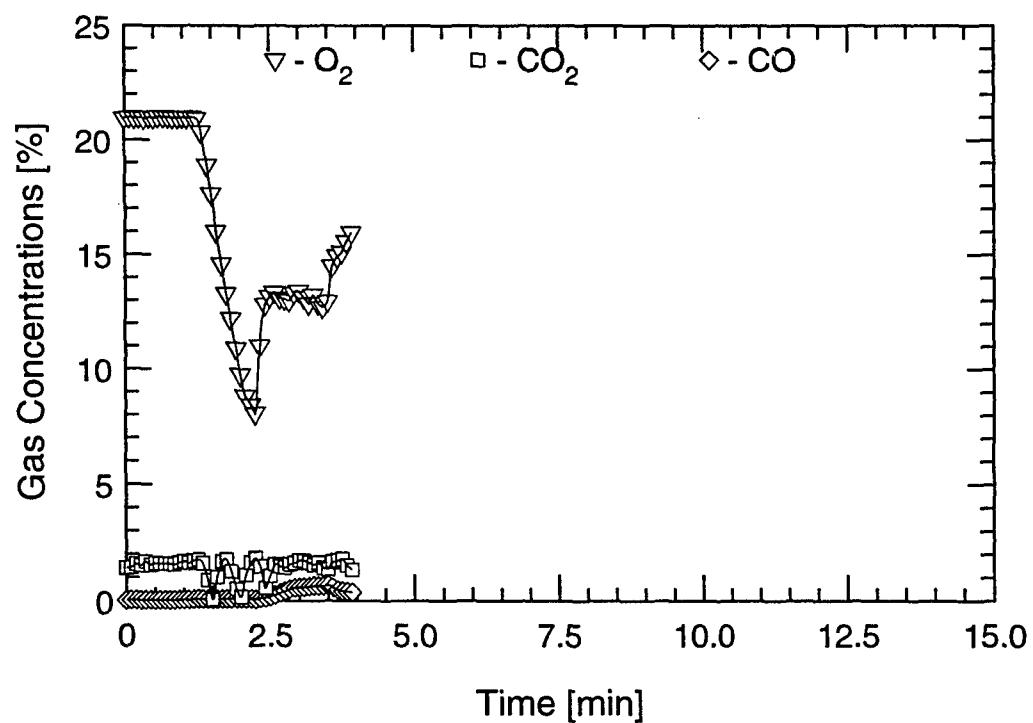


Forward Tree

TEST #25



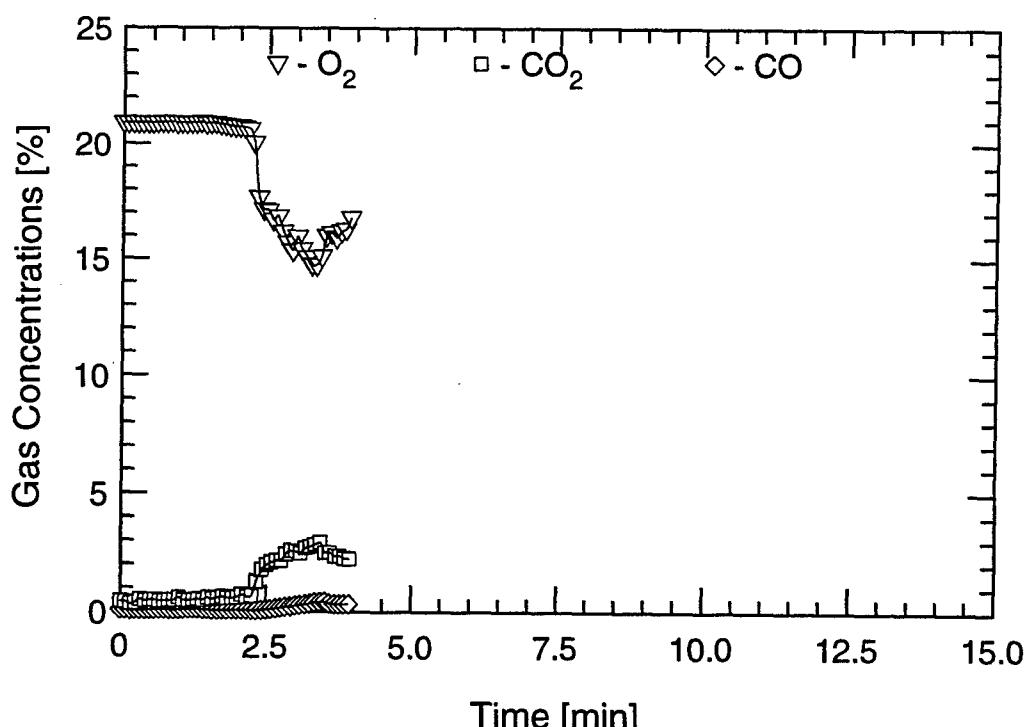
Aft Tree (Low)



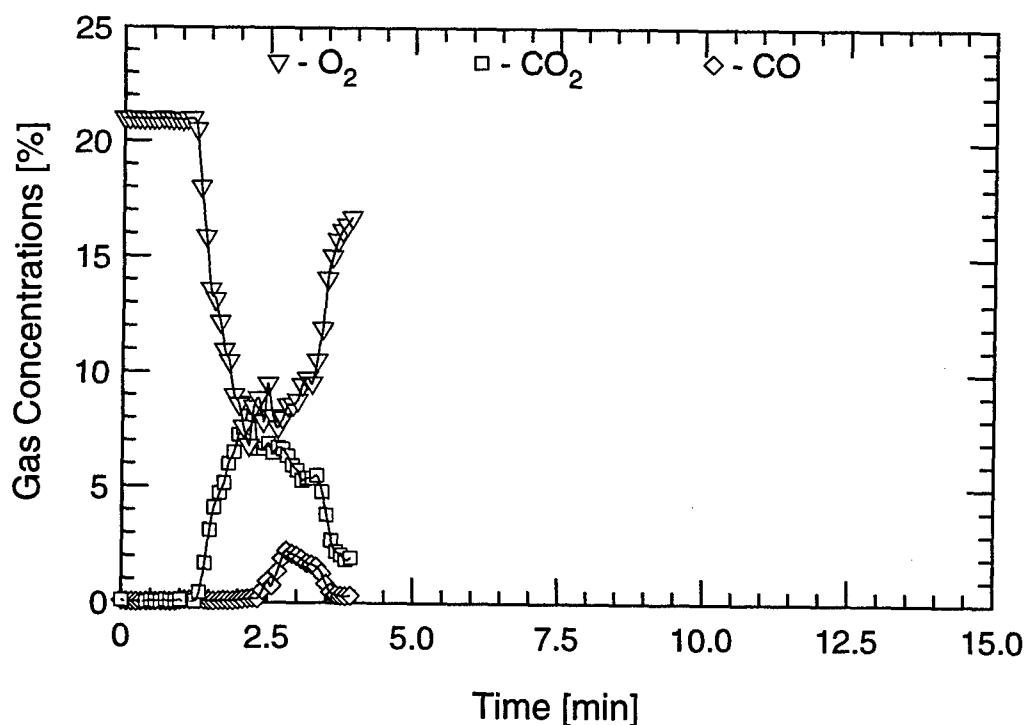
Aft Tree (High)

TEST #25

B-149



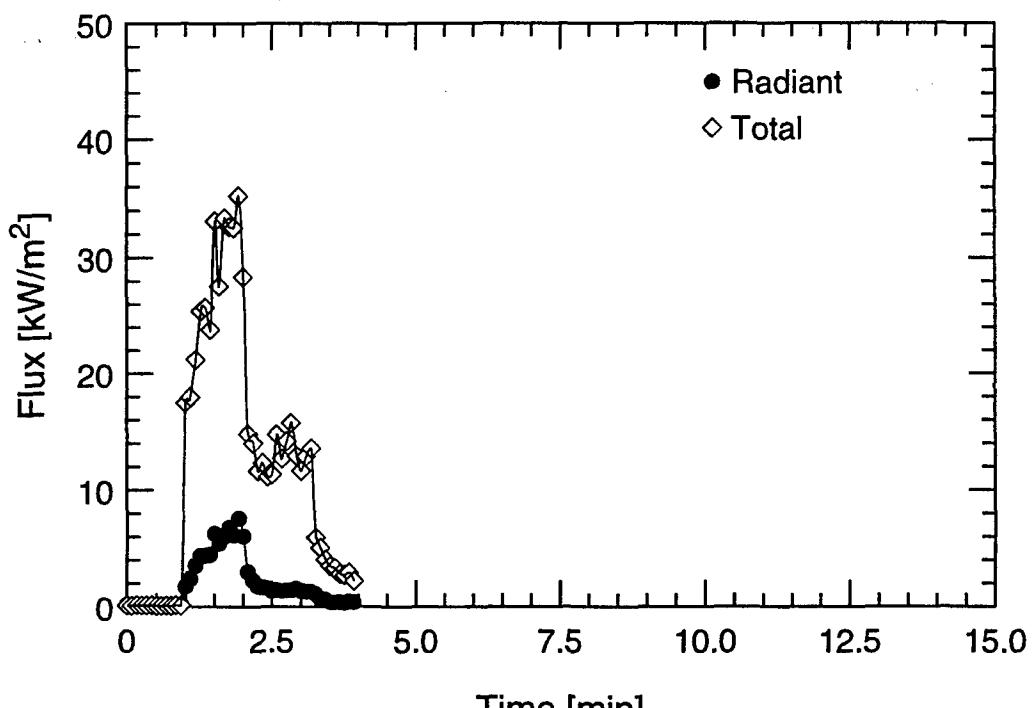
Forward Tree (Low)



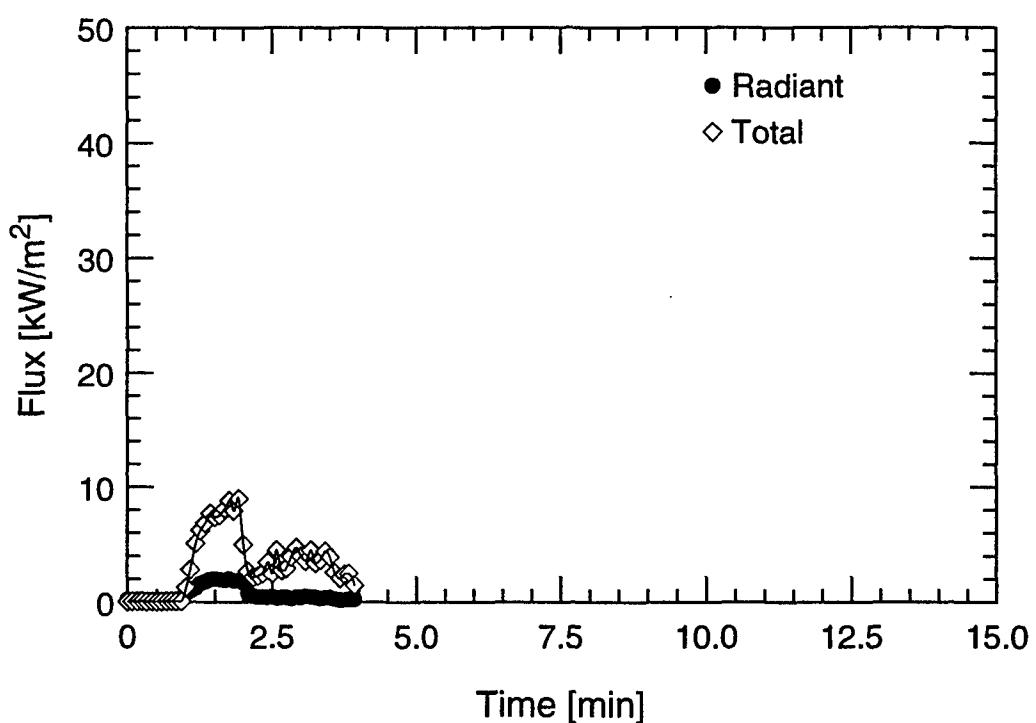
Forward Tree (High)

TEST #25

B-150



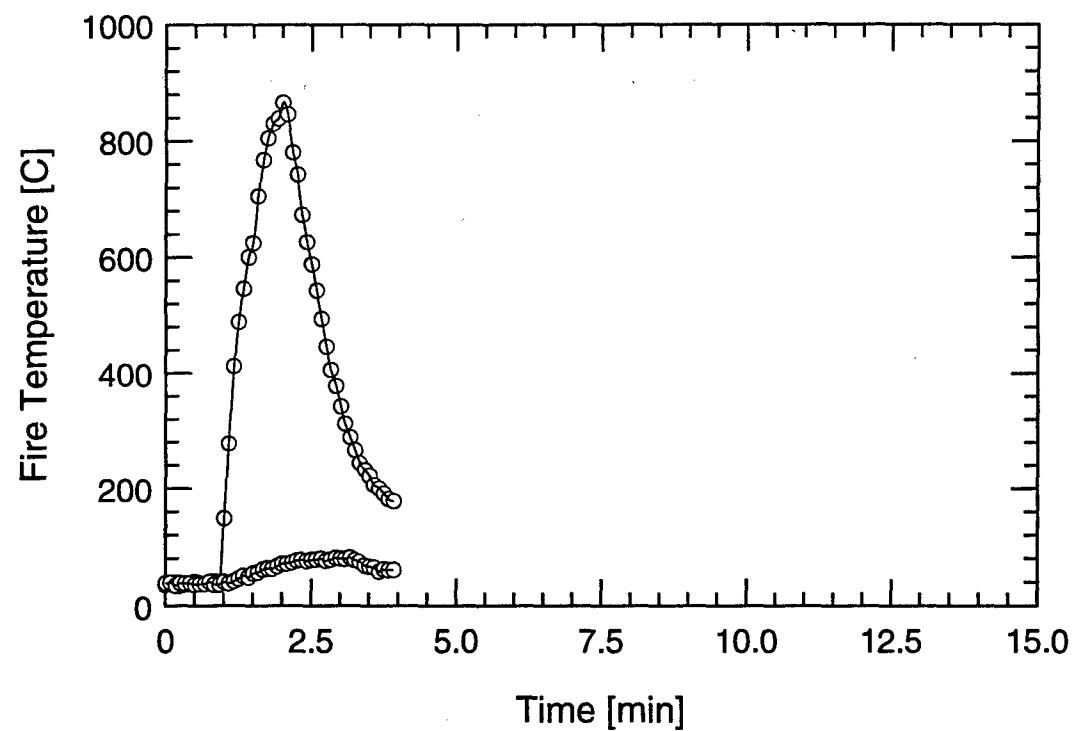
Overhead



Forward Bulkhead

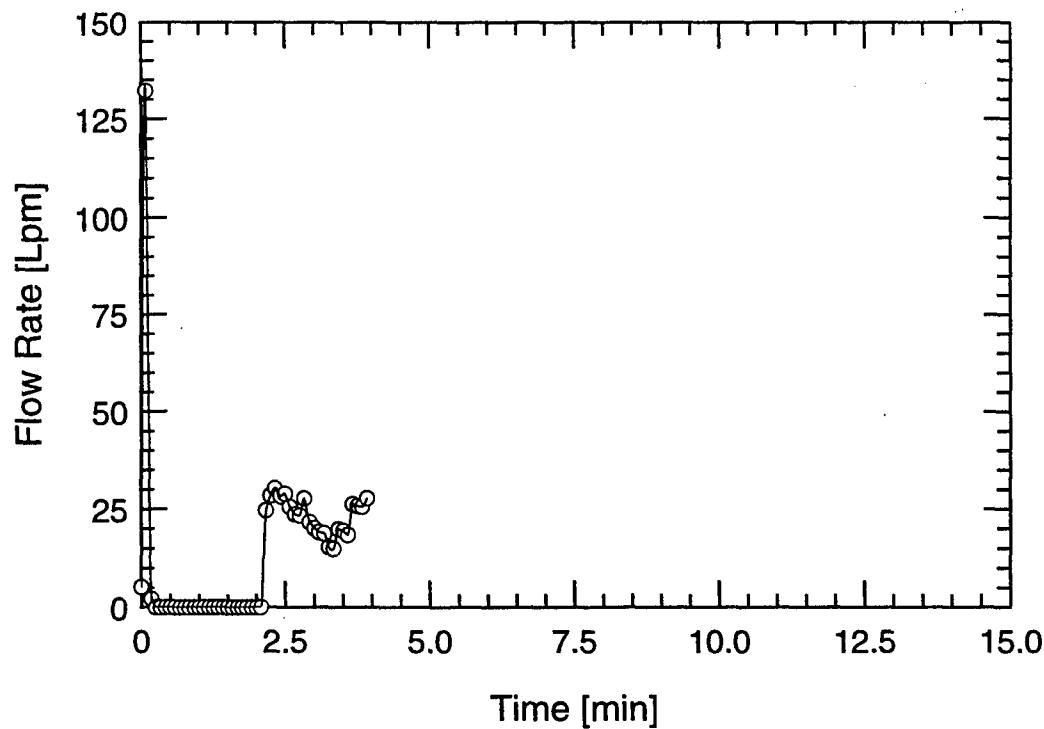
TEST #25

B-151

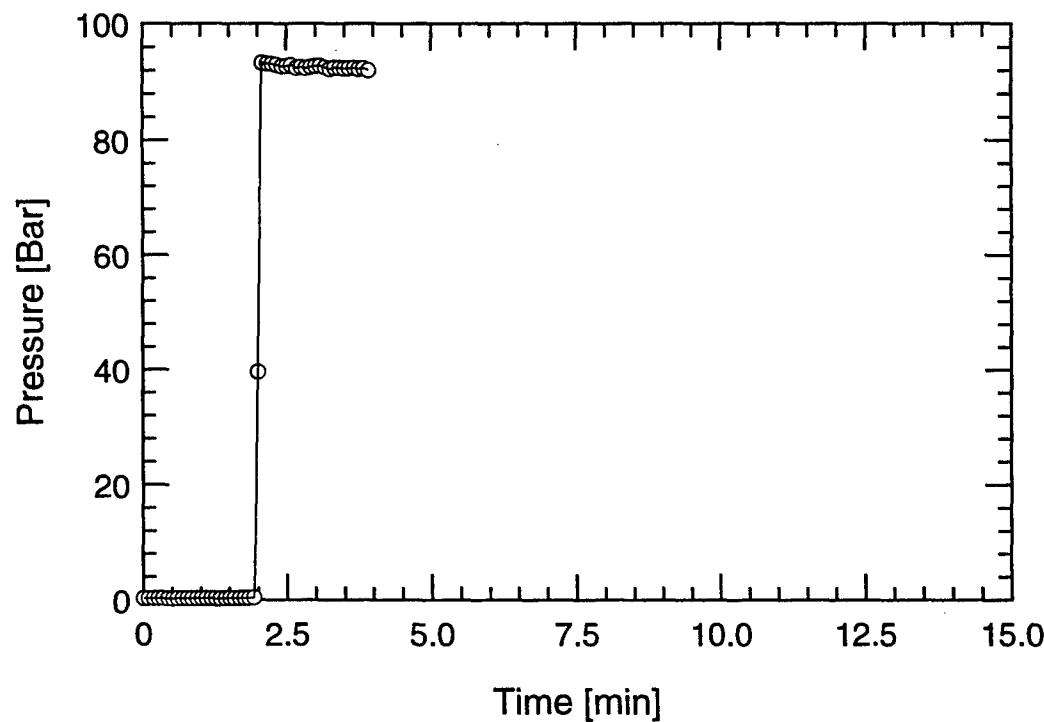


TEST #25

B-152



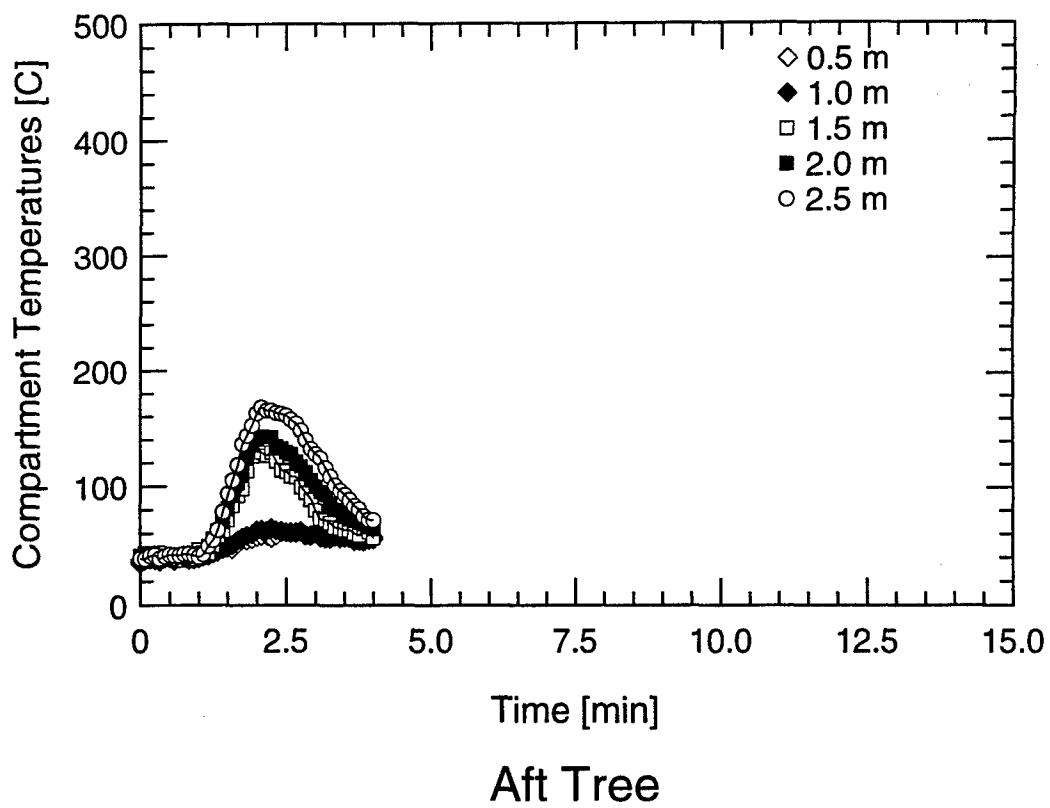
Water Mist System Flow Rate



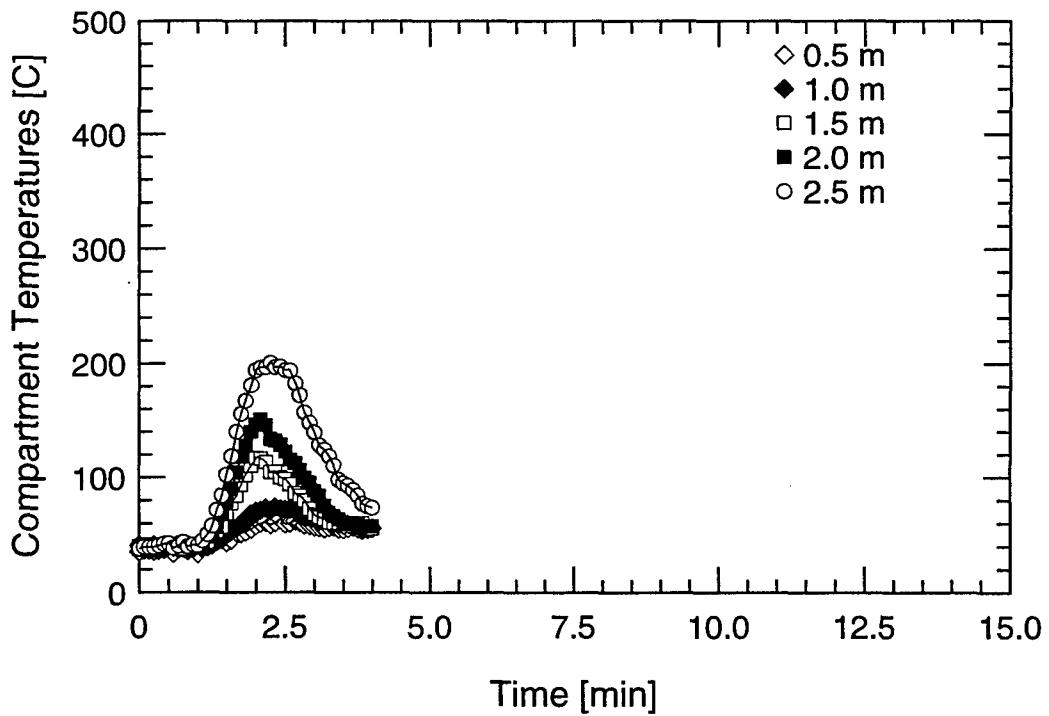
Water Mist System Pressure

TEST #25

B-153



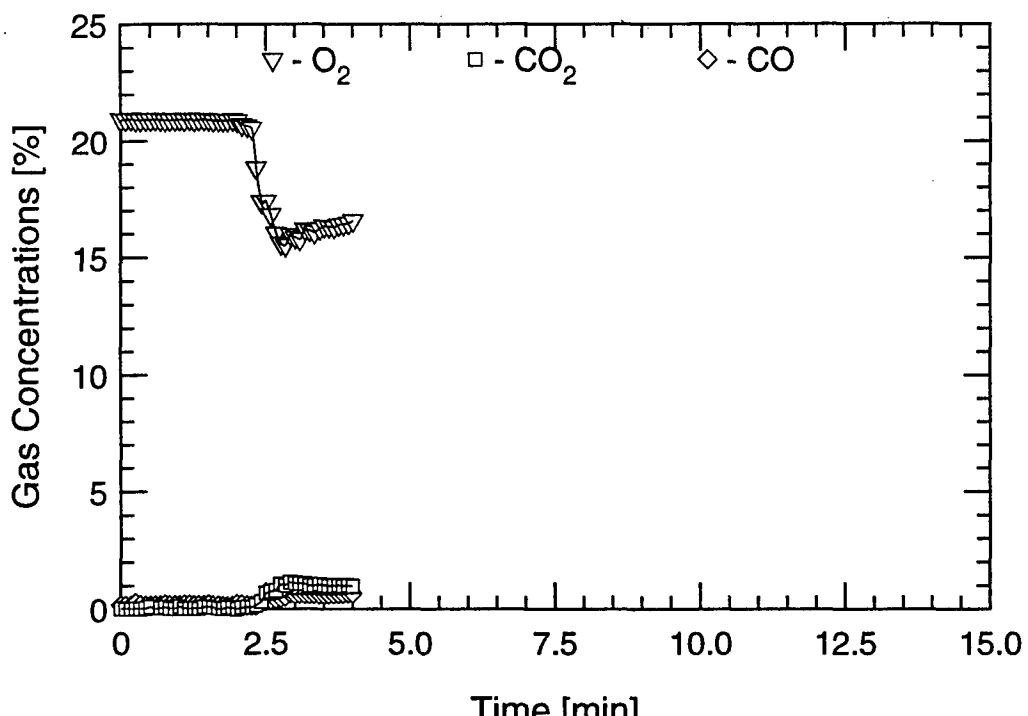
Aft Tree



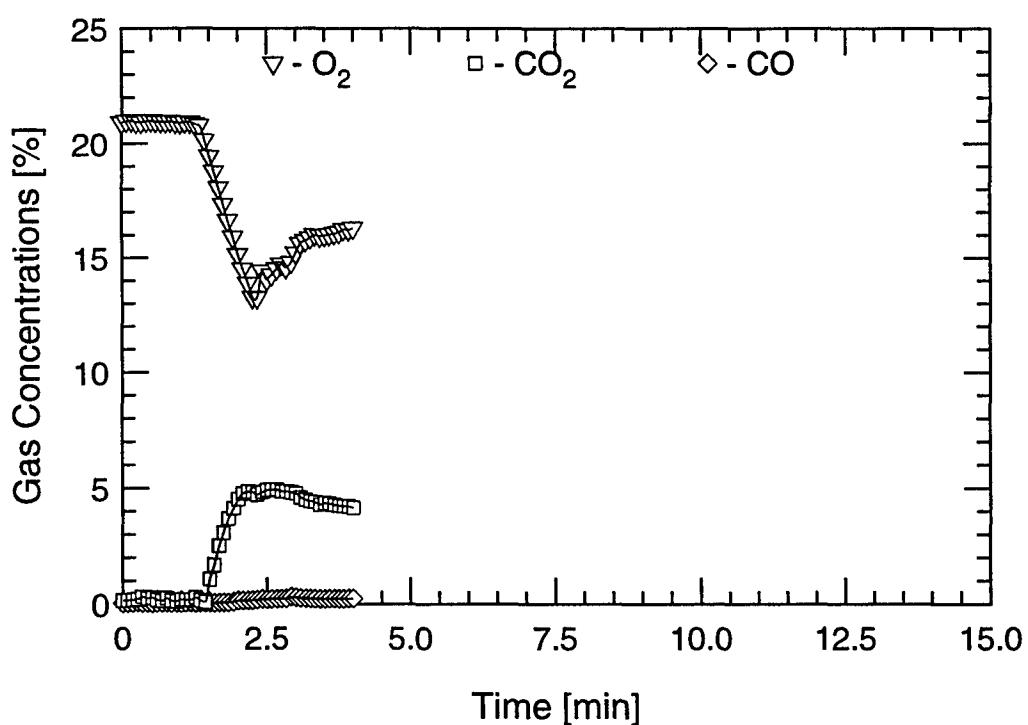
Forward Tree

TEST #26

B-154



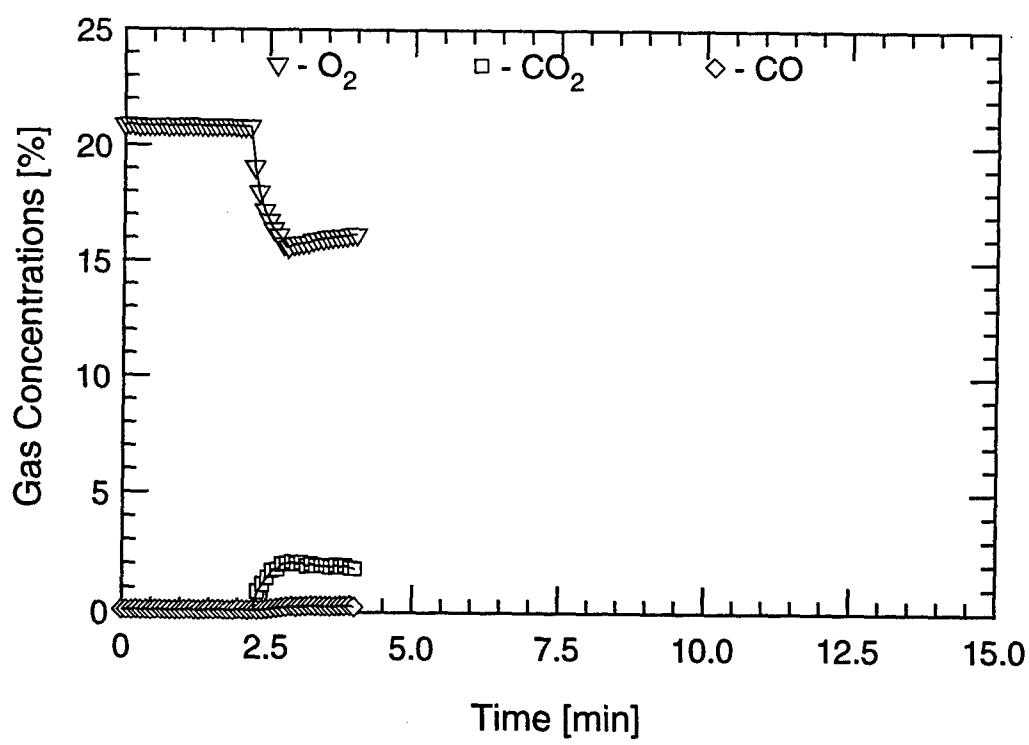
Aft Tree (Low)



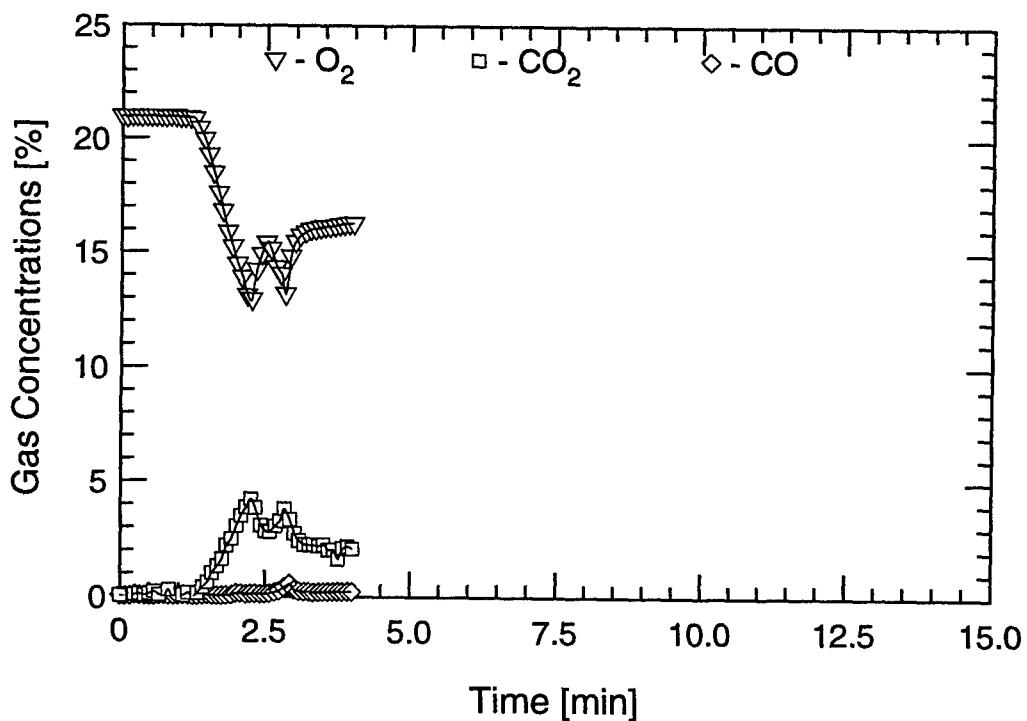
Aft Tree (High)

TEST #26

B-155

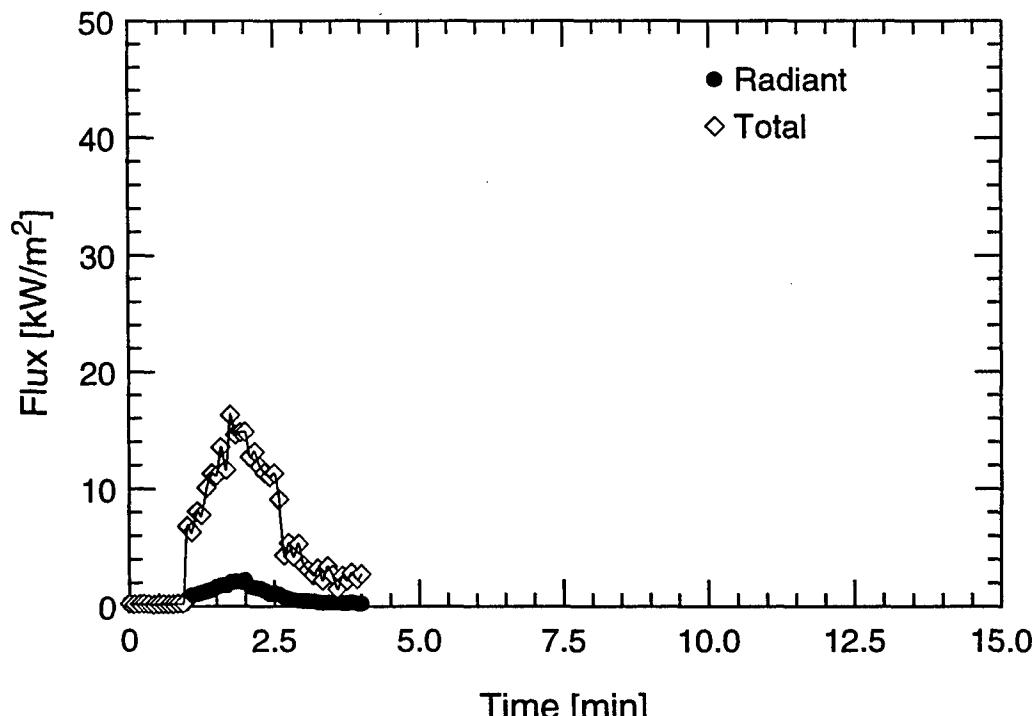


Forward Tree (Low)

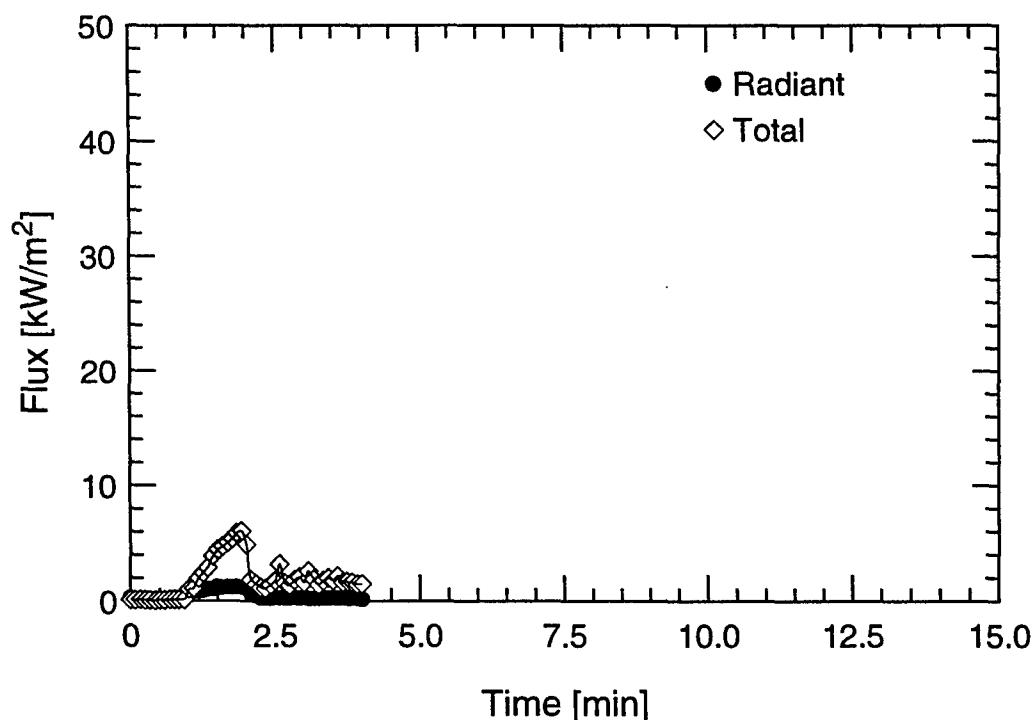


Forward Tree (High)

TEST #26

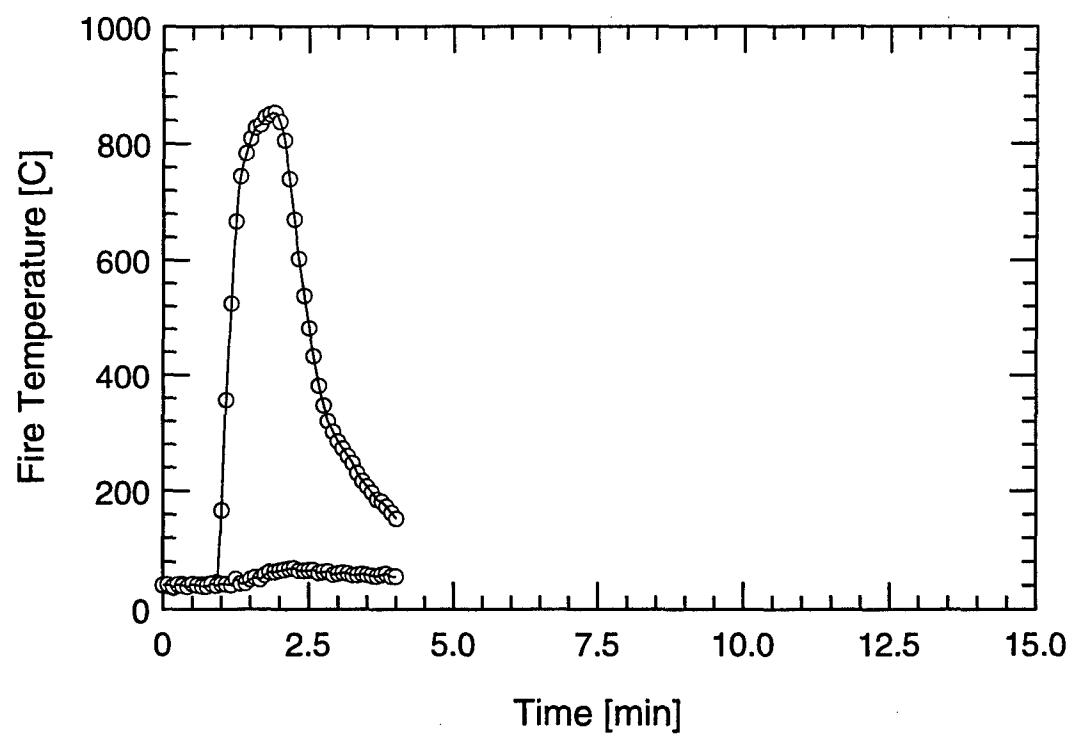


Overhead



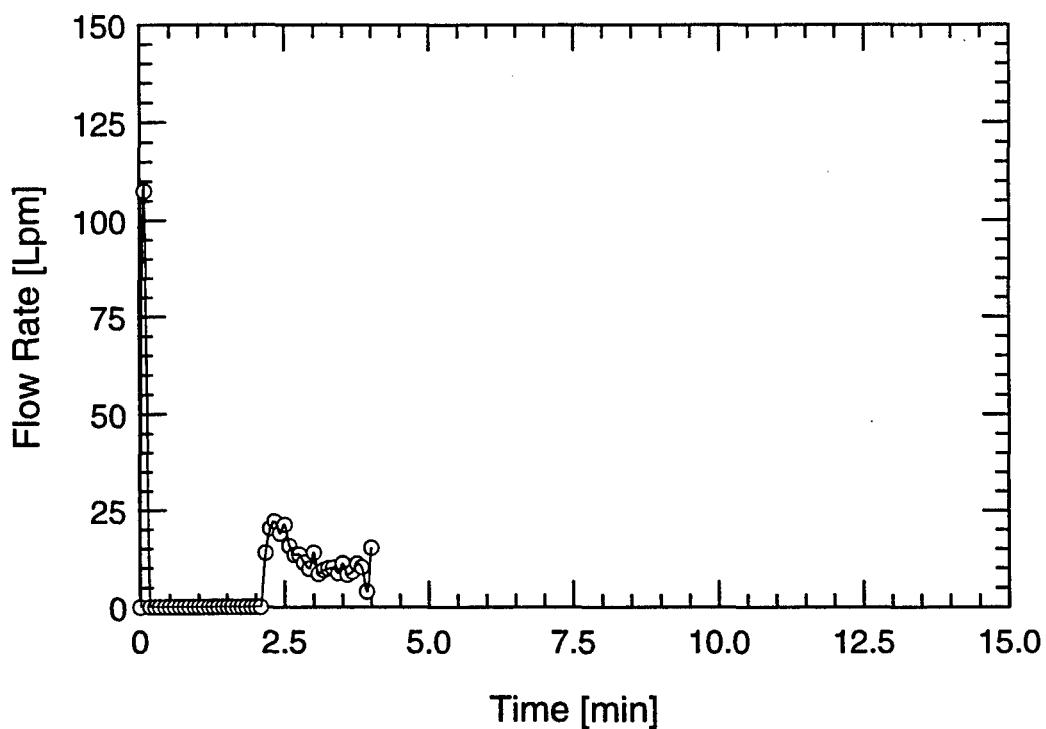
Forward Bulkhead

TEST #26

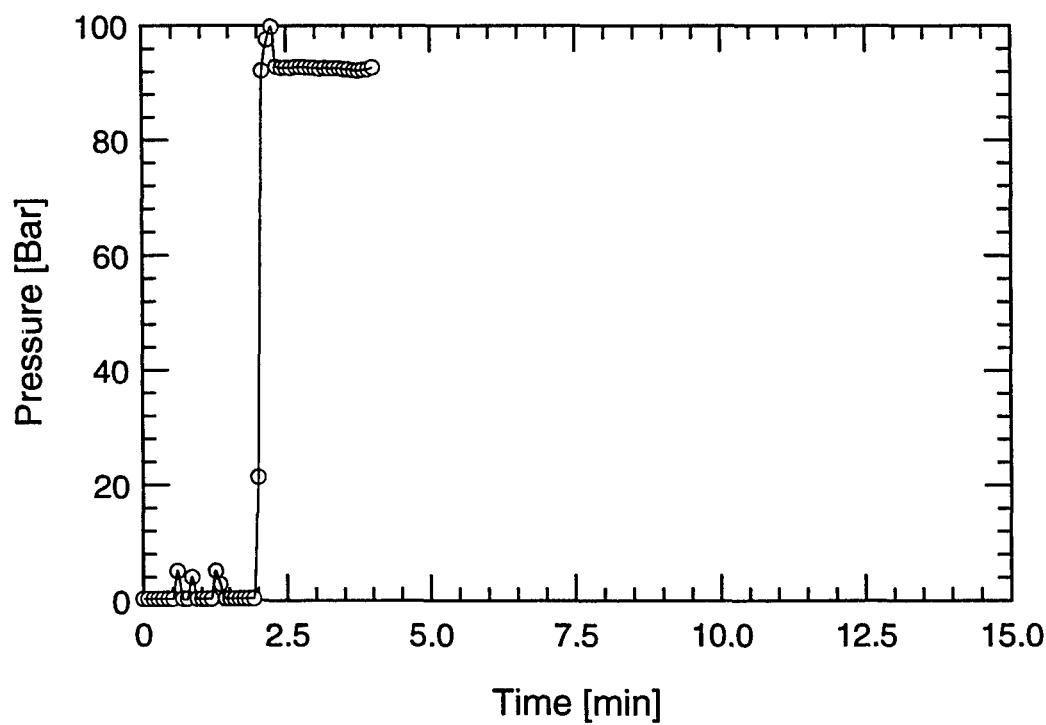


TEST #26

B-158

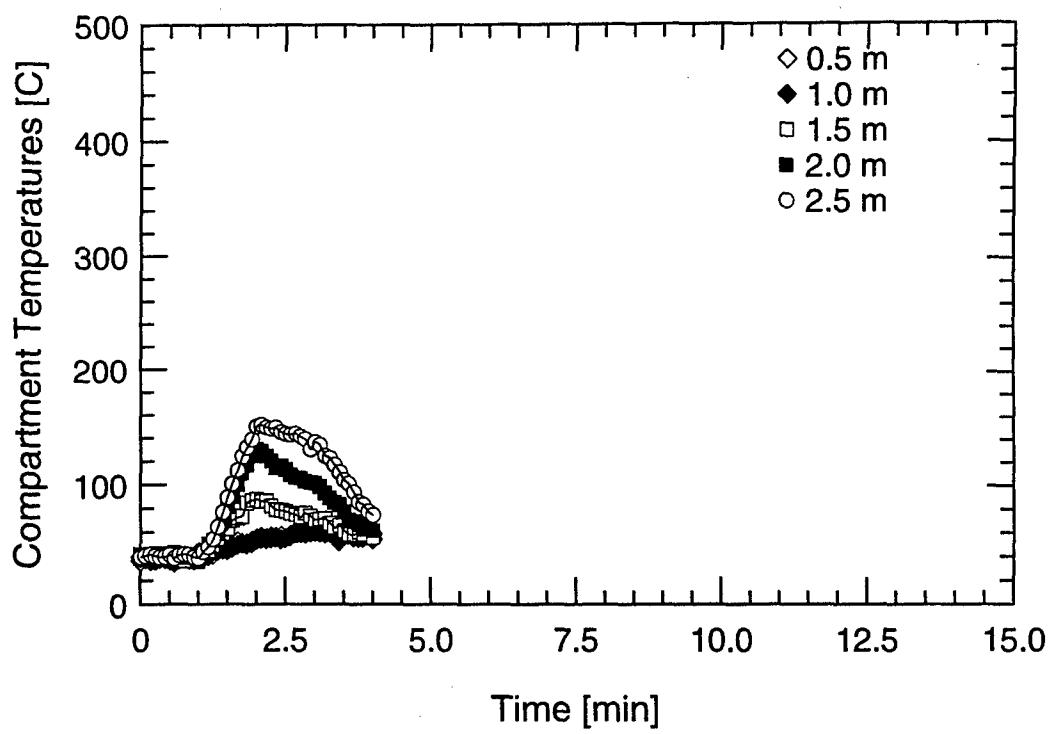


Water Mist System Flow Rate

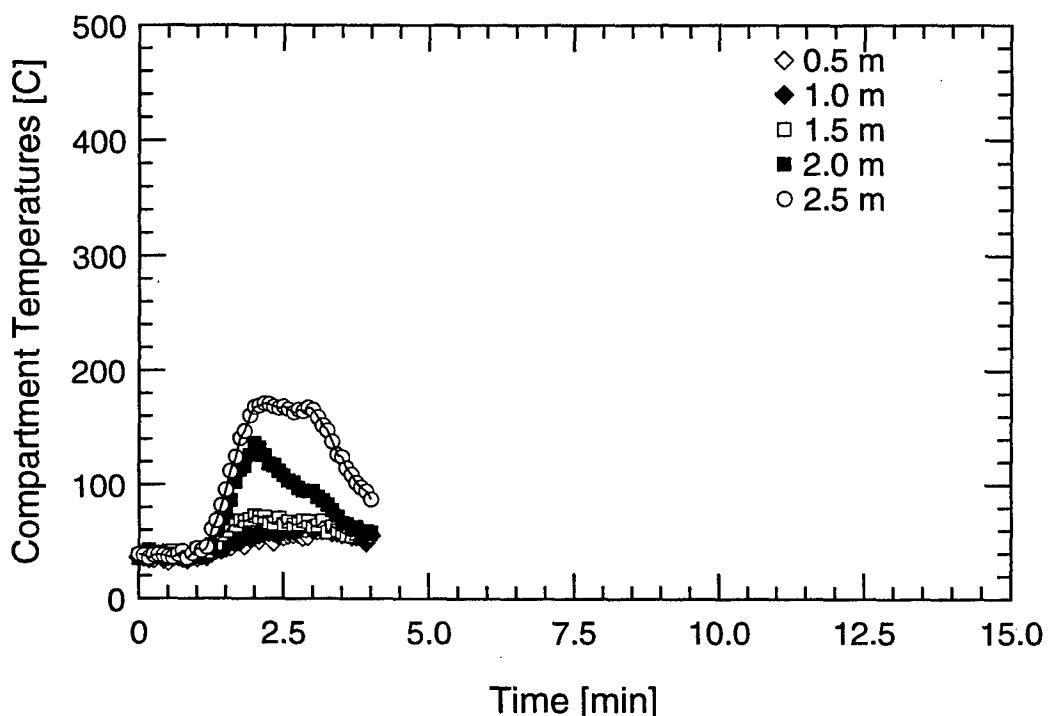


Water Mist System Pressure

TEST #26

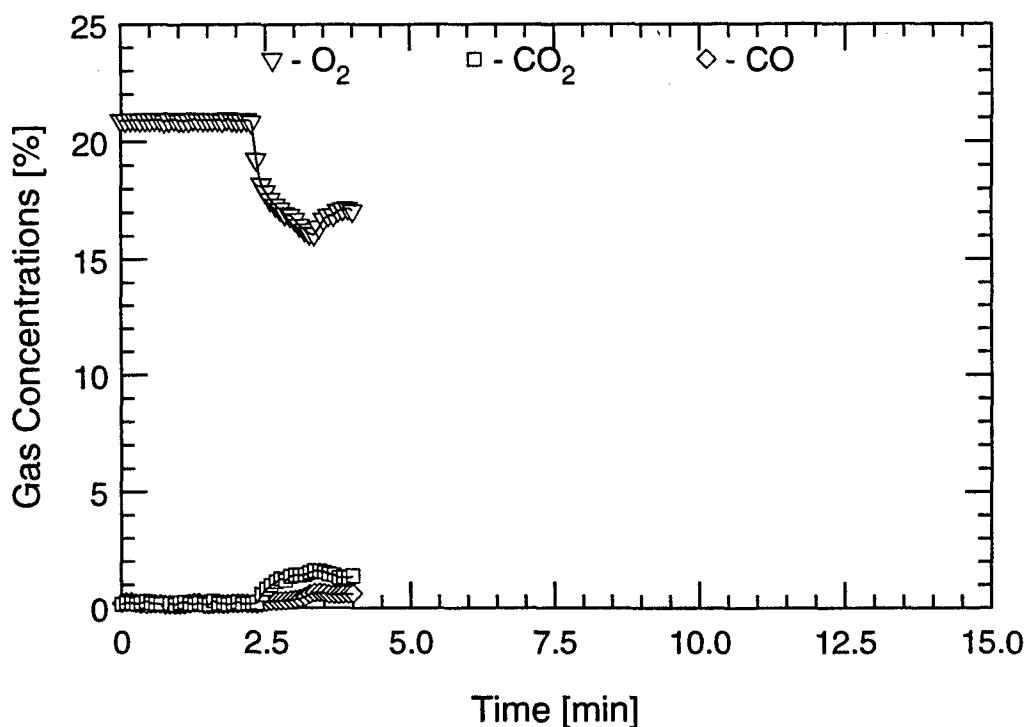


Aft Tree

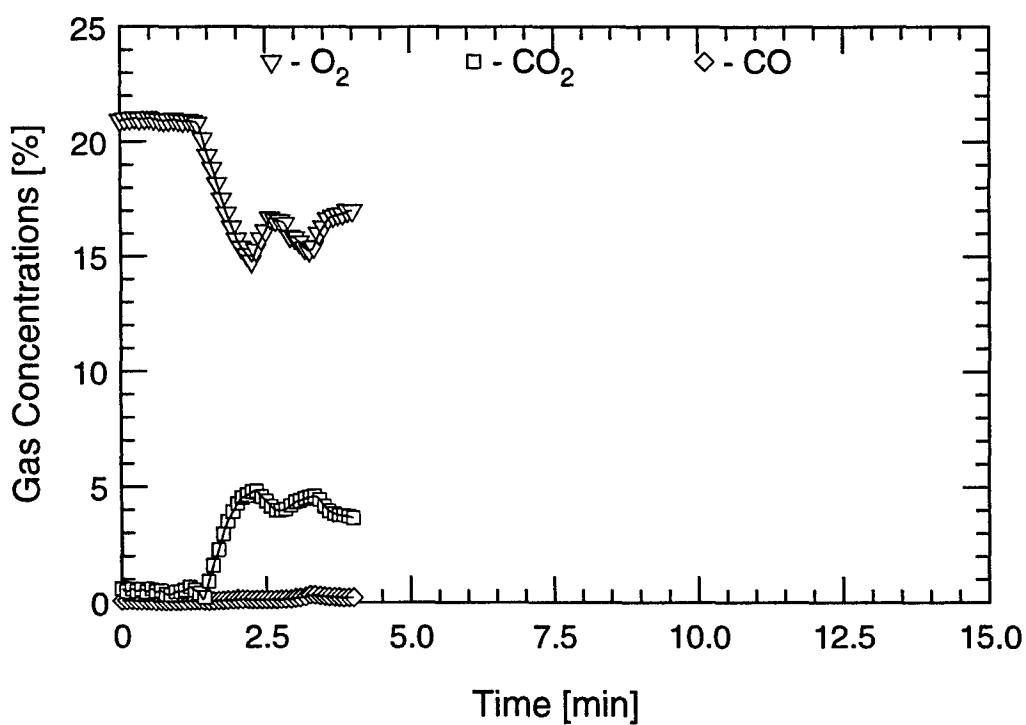


Forward Tree

TEST #27

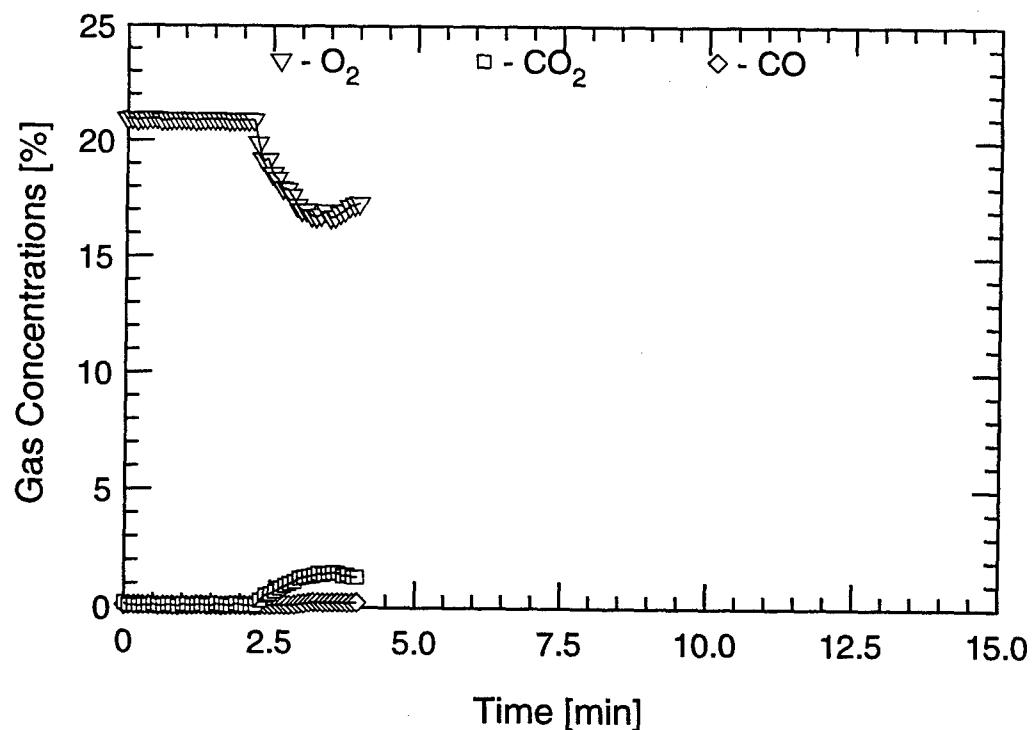


Aft Tree (Low)

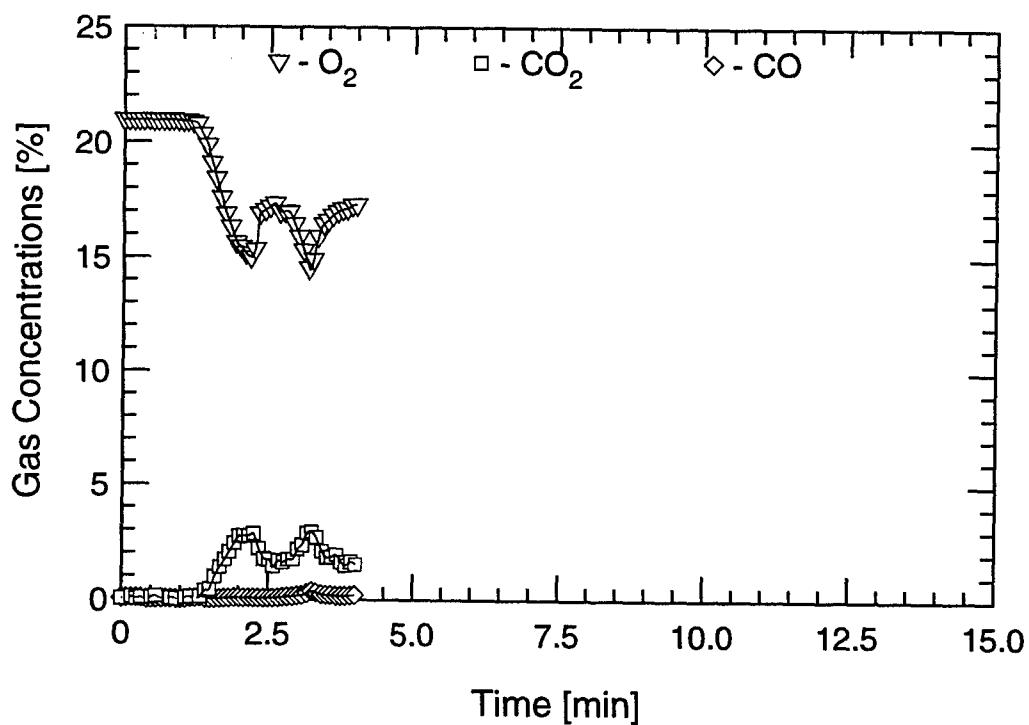


Aft Tree (High)

TEST #27



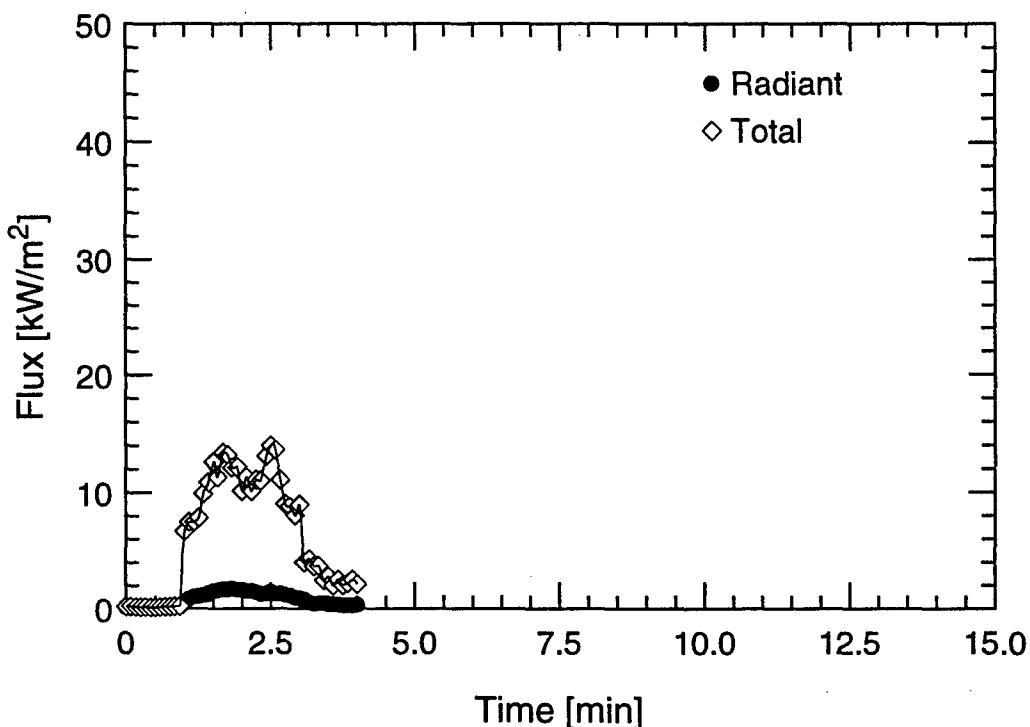
Forward Tree (Low)



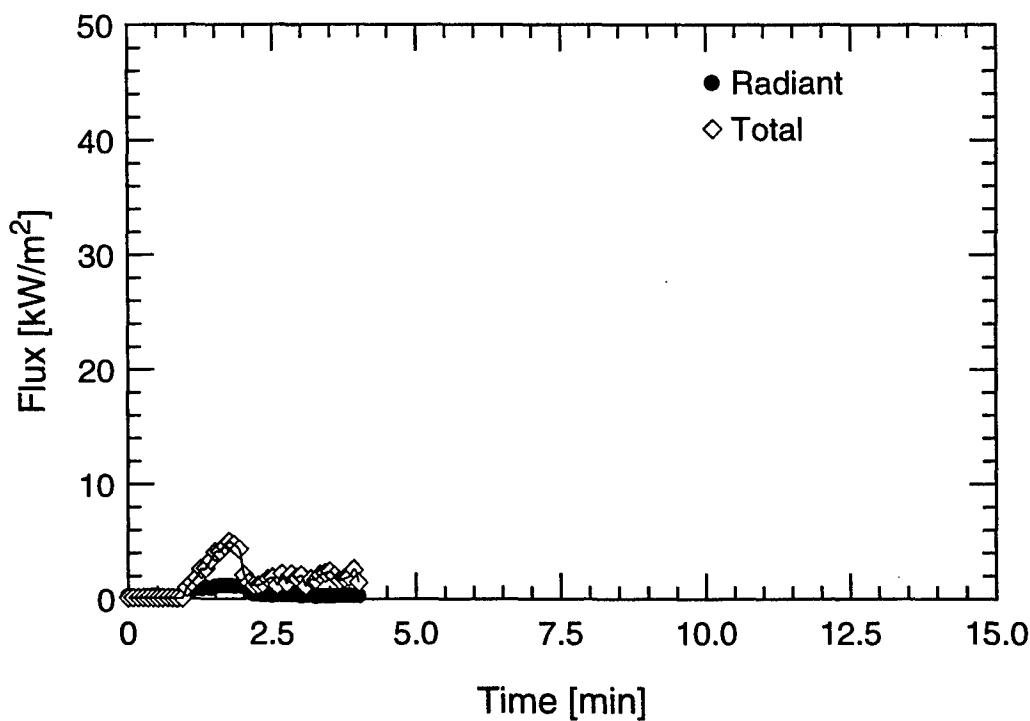
Forward Tree (High)

TEST #27

B-162

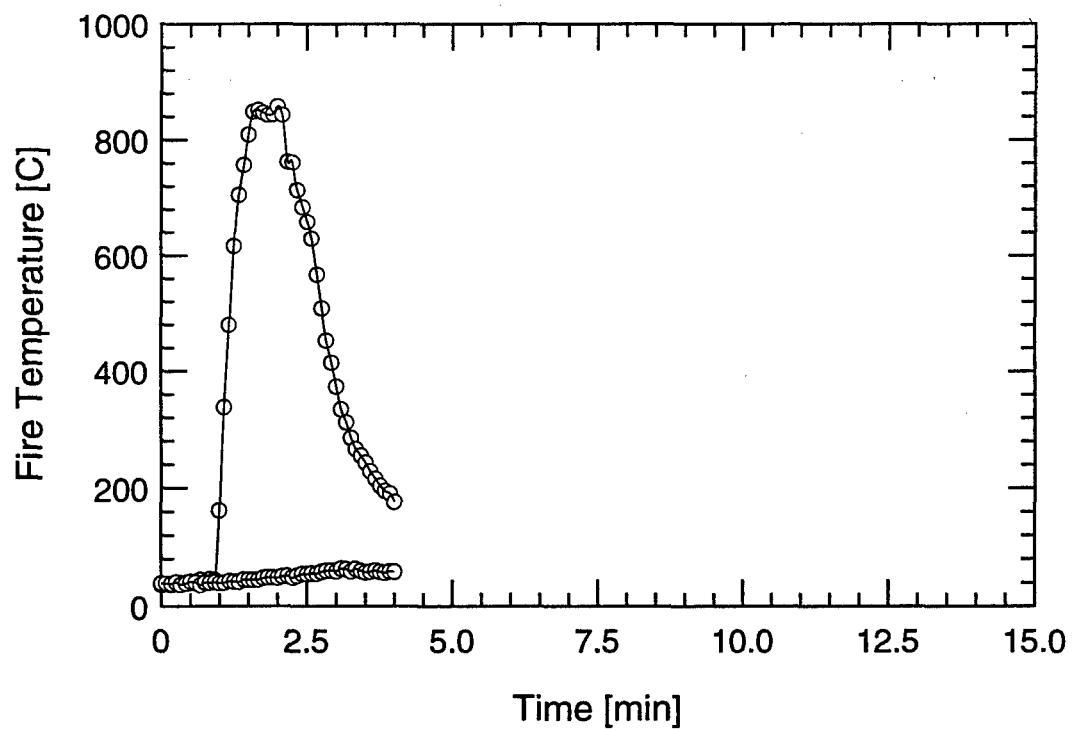


Overhead



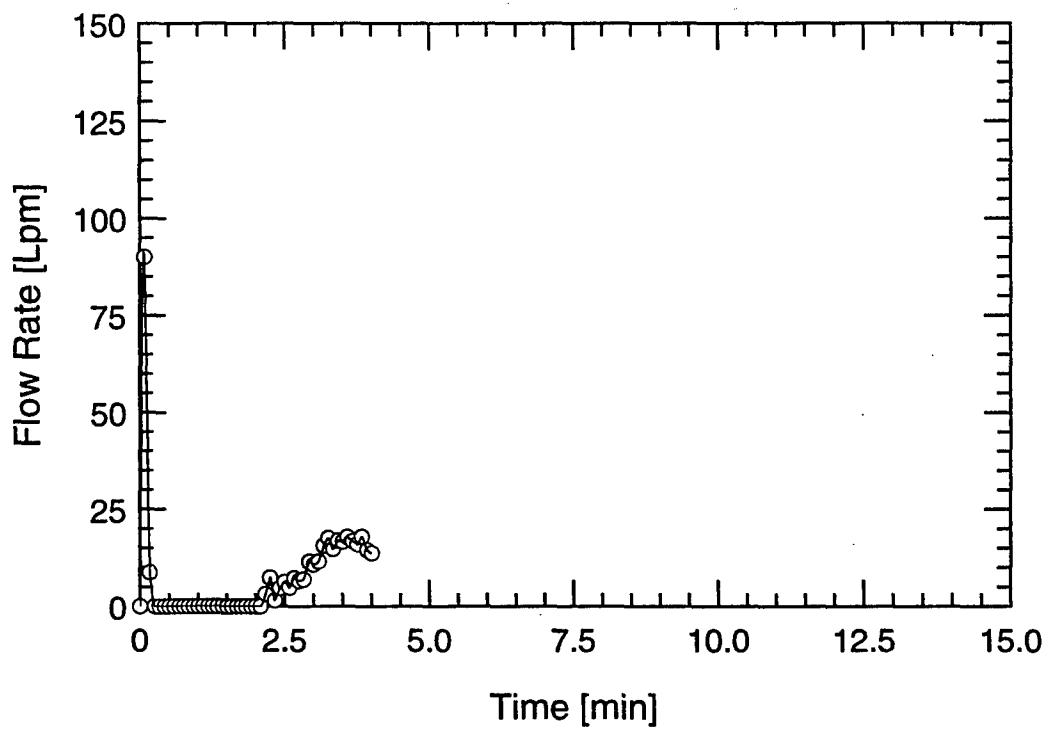
Forward Bulkhead

TEST #27

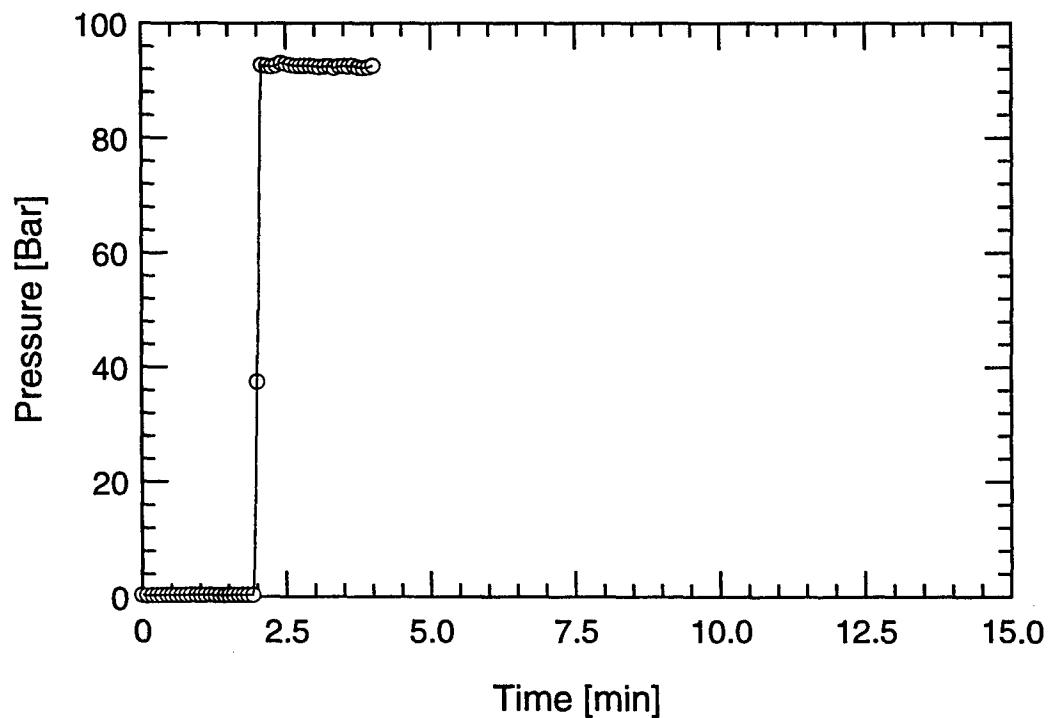


TEST #27

B-164

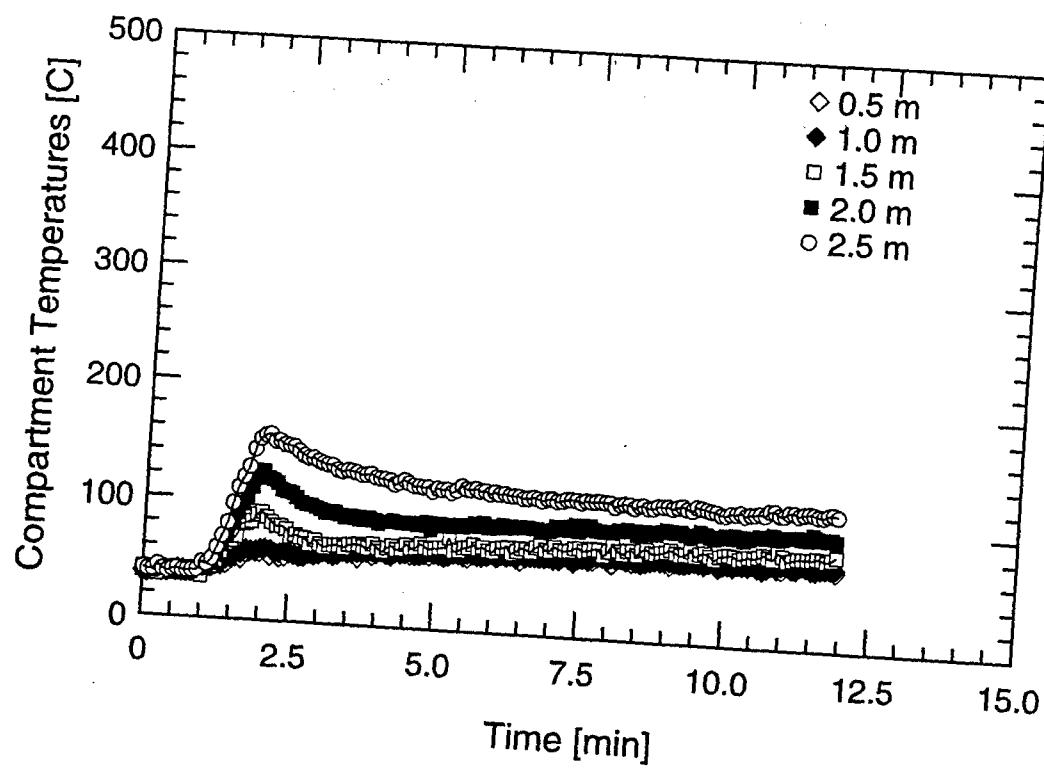


Water Mist System Flow Rate

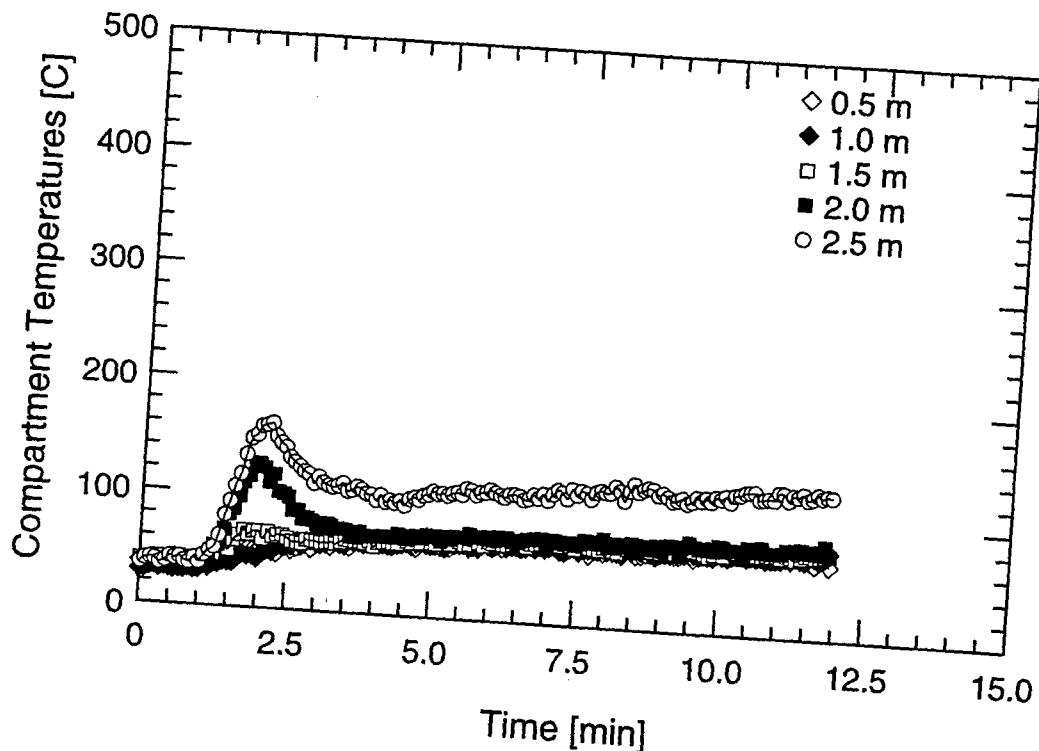


Water Mist System Pressure

TEST #27



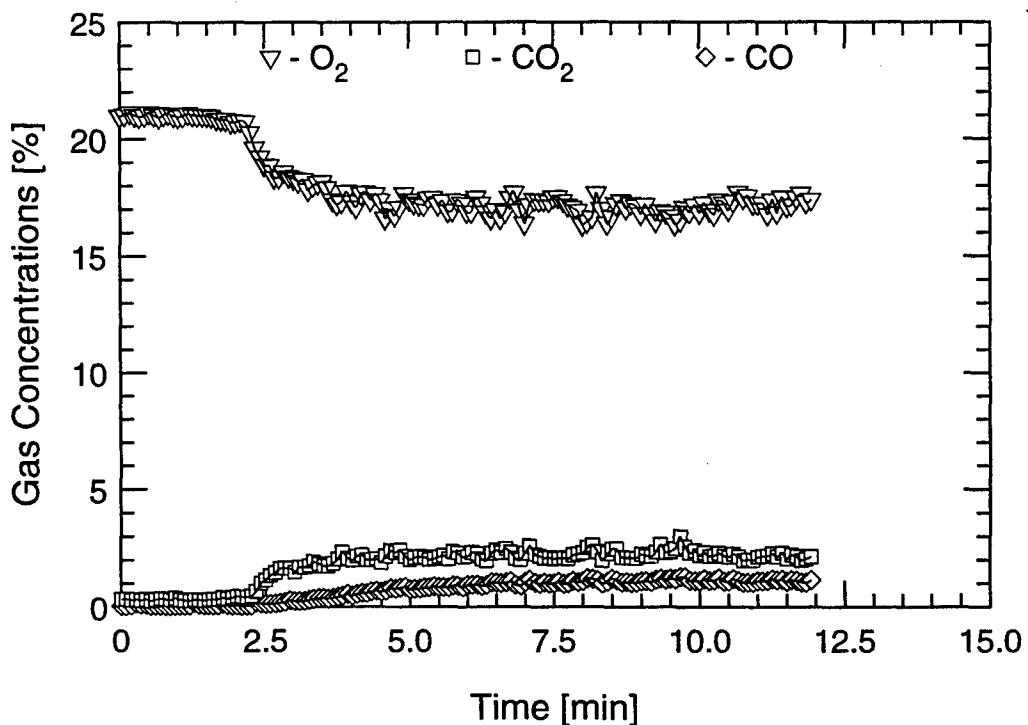
Aft Tree



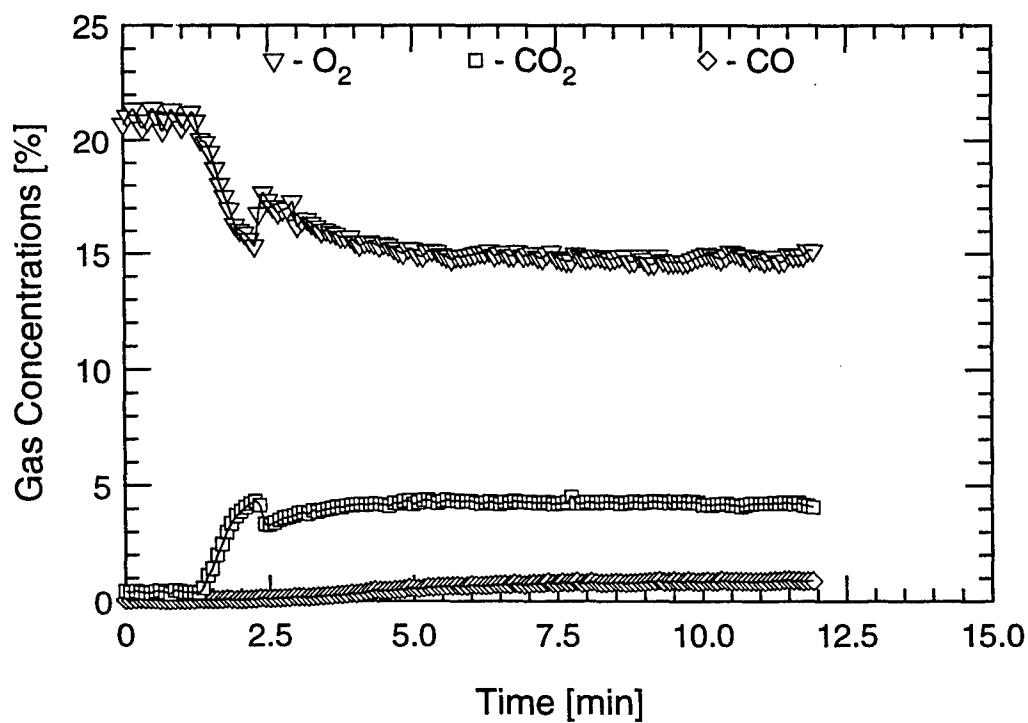
Forward Tree

TEST #28

B-166

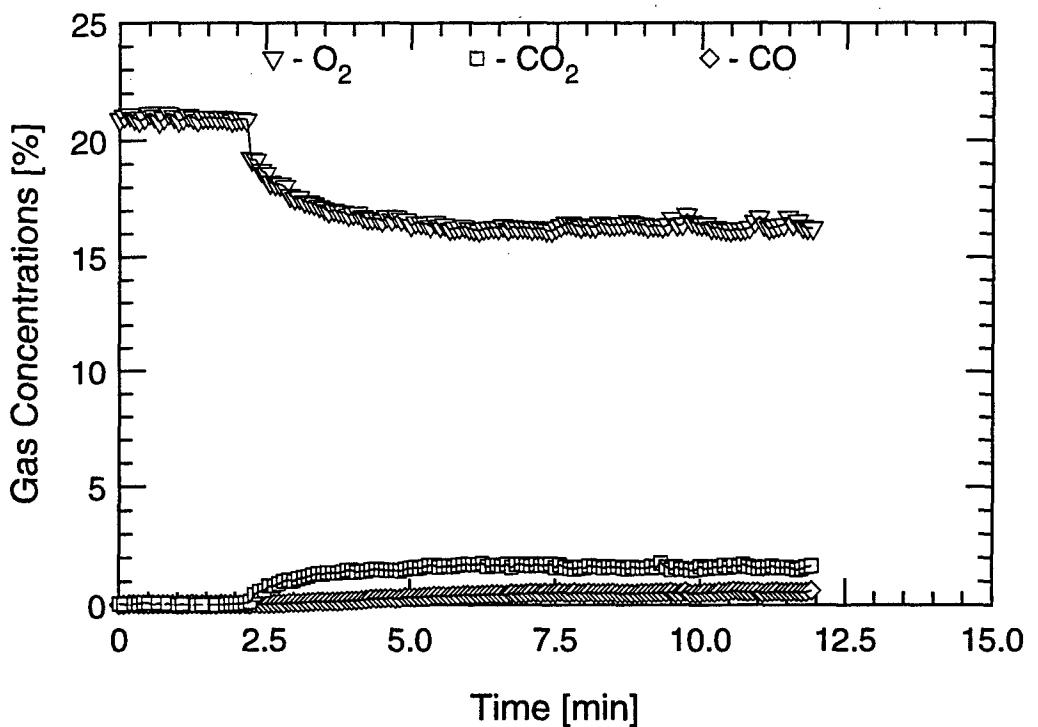


Aft Tree (Low)

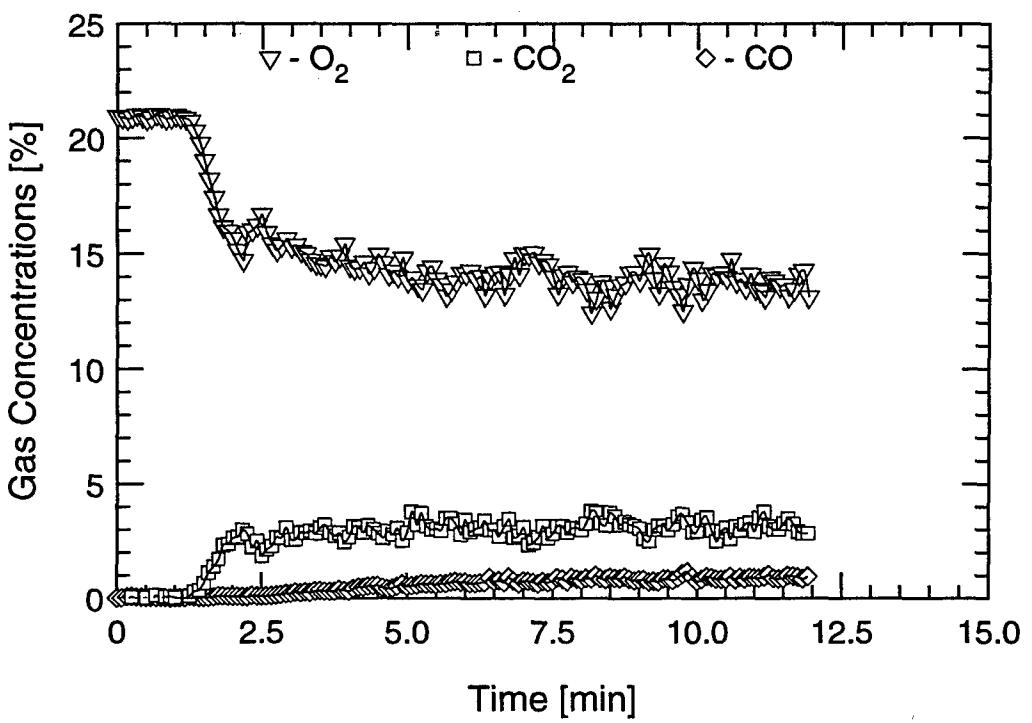


Aft Tree (High)

TEST #28



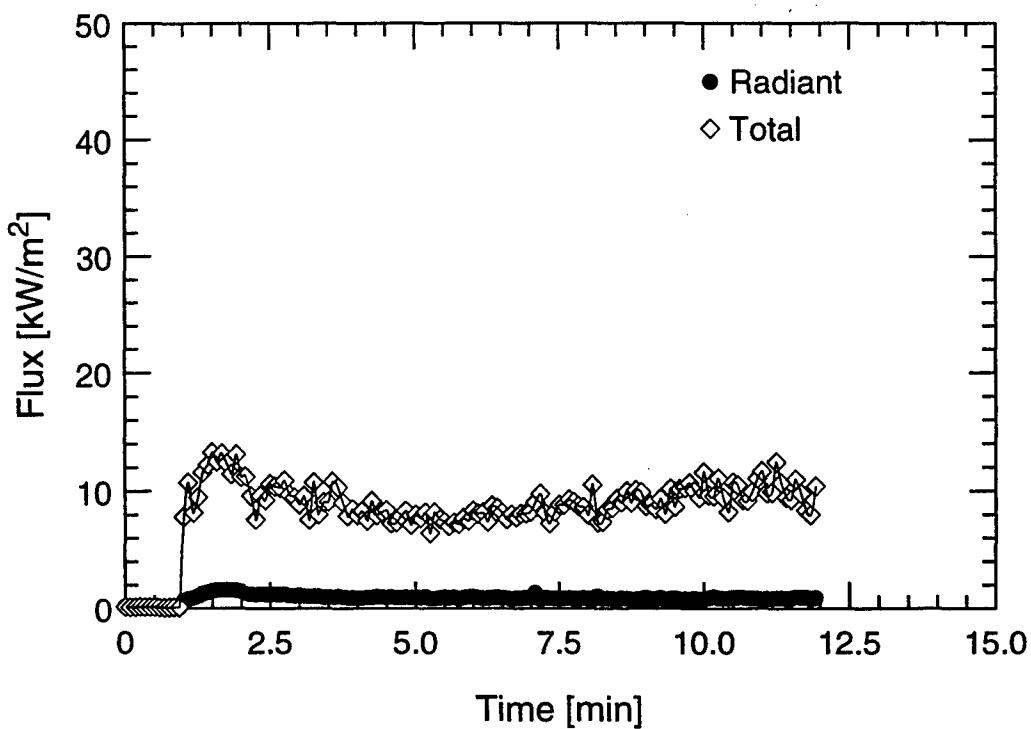
Forward Tree (Low)



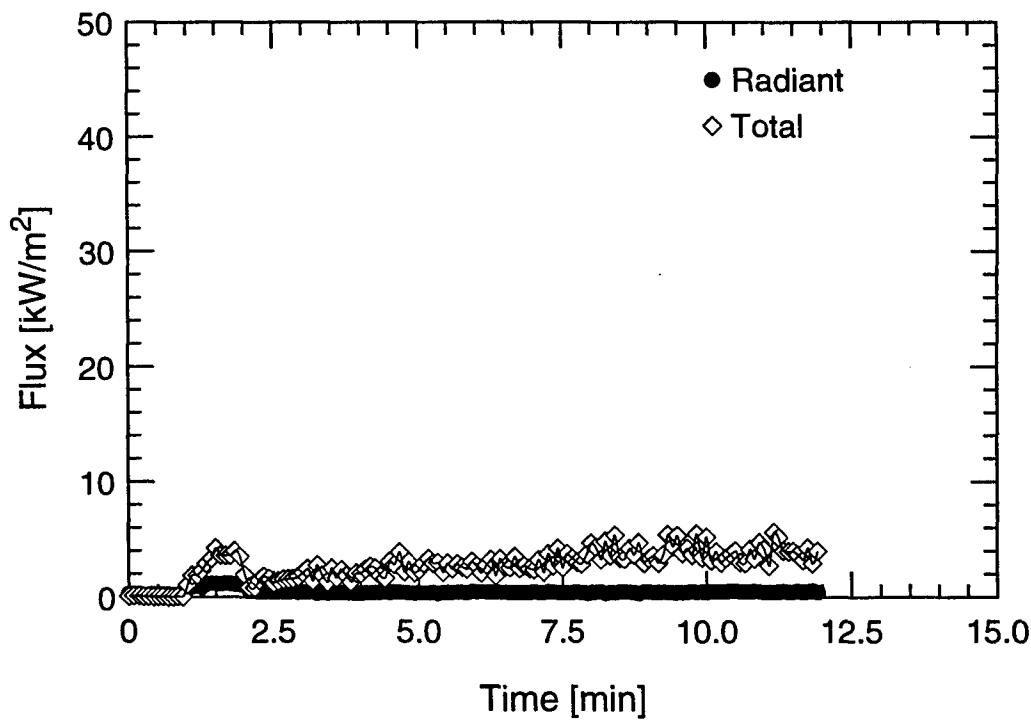
Forward Tree (High)

TEST #28

B-168



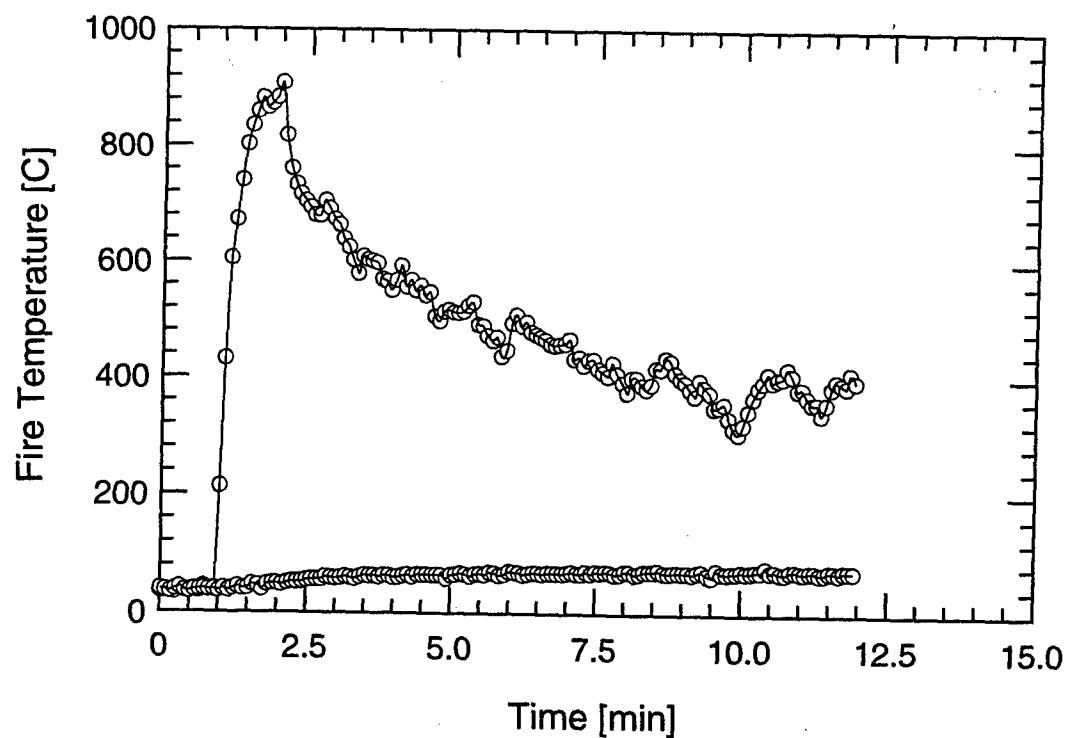
Overhead



Forward Bulkhead

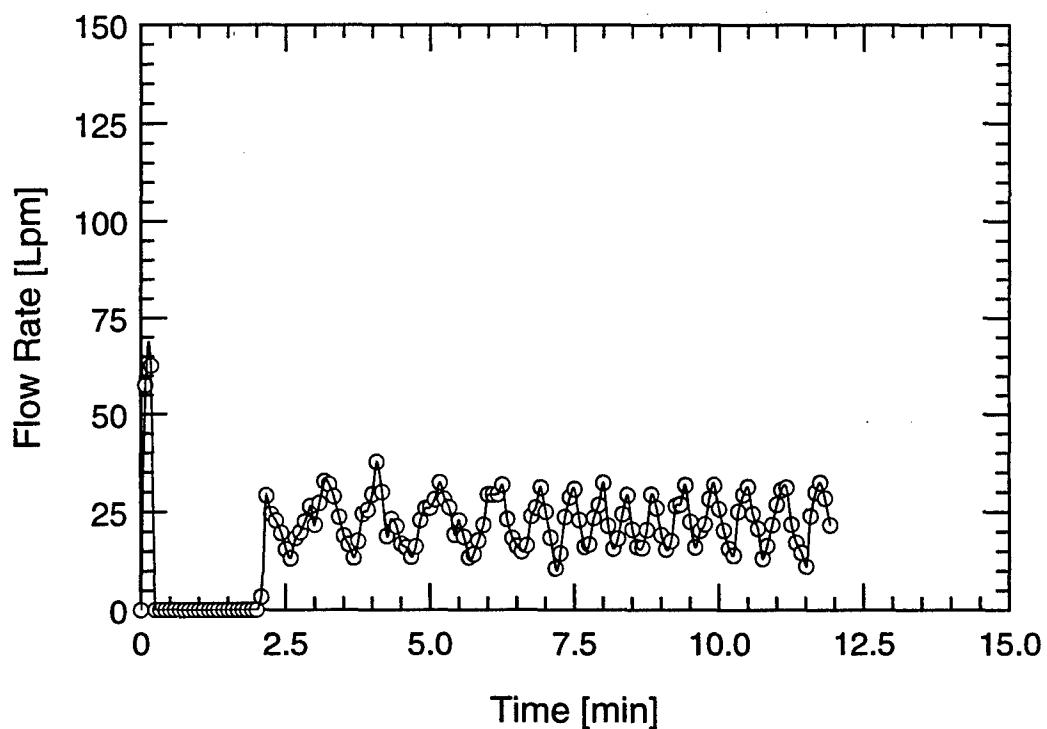
TEST #28

B-169

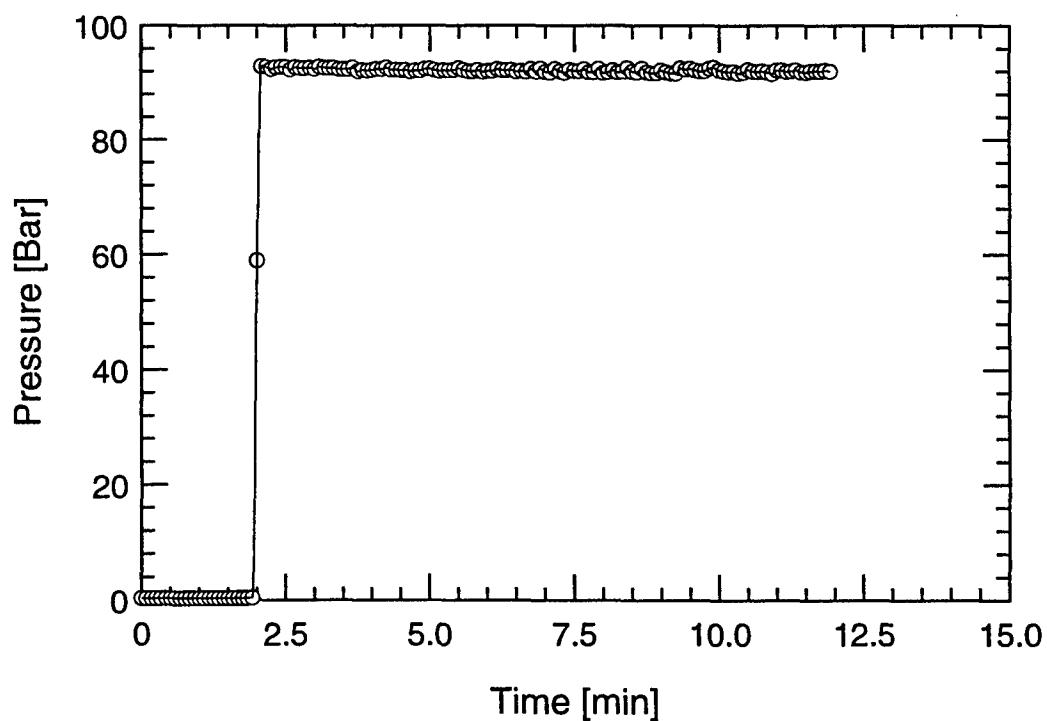


TEST #28

B-170

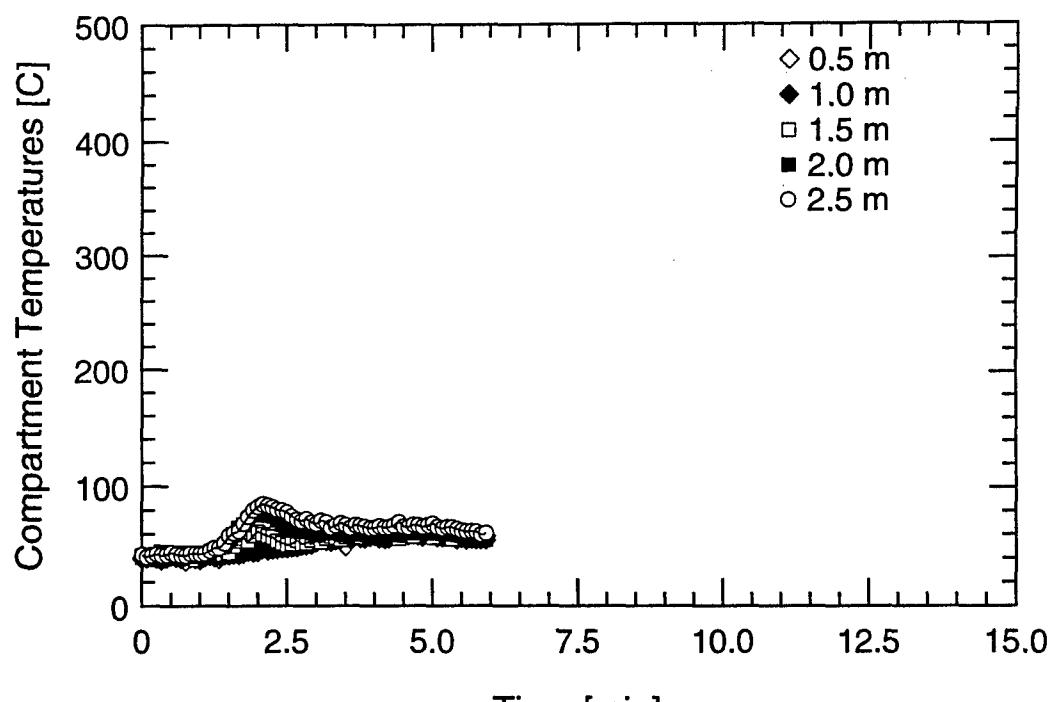


Water Mist System Flow Rate

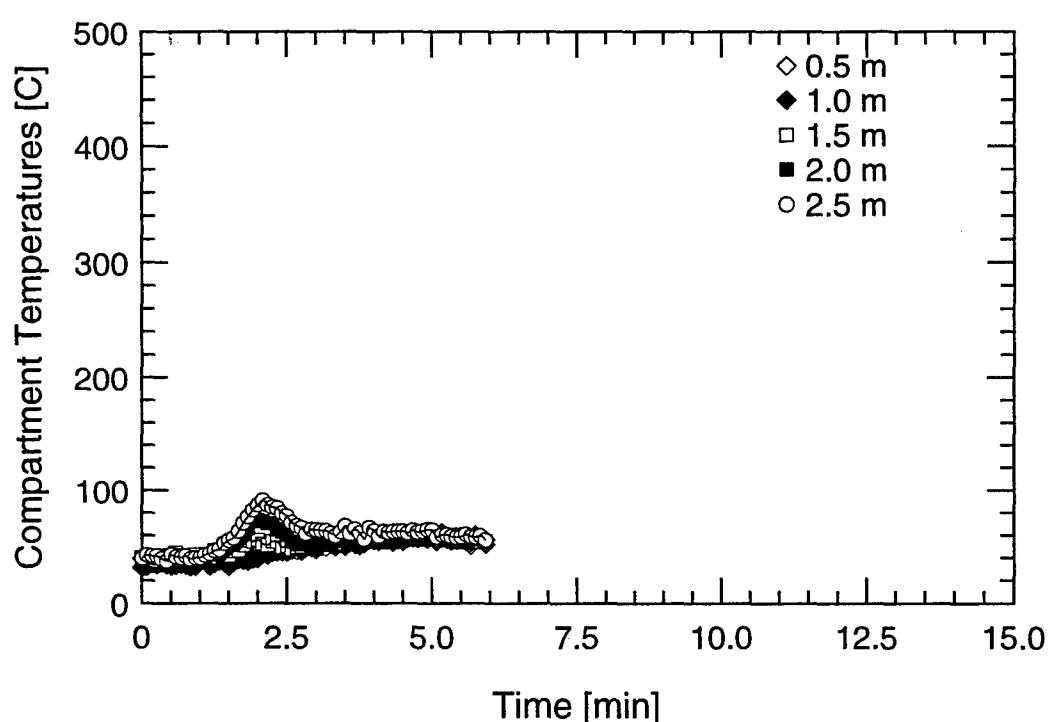


Water Mist System Pressure

TEST #28



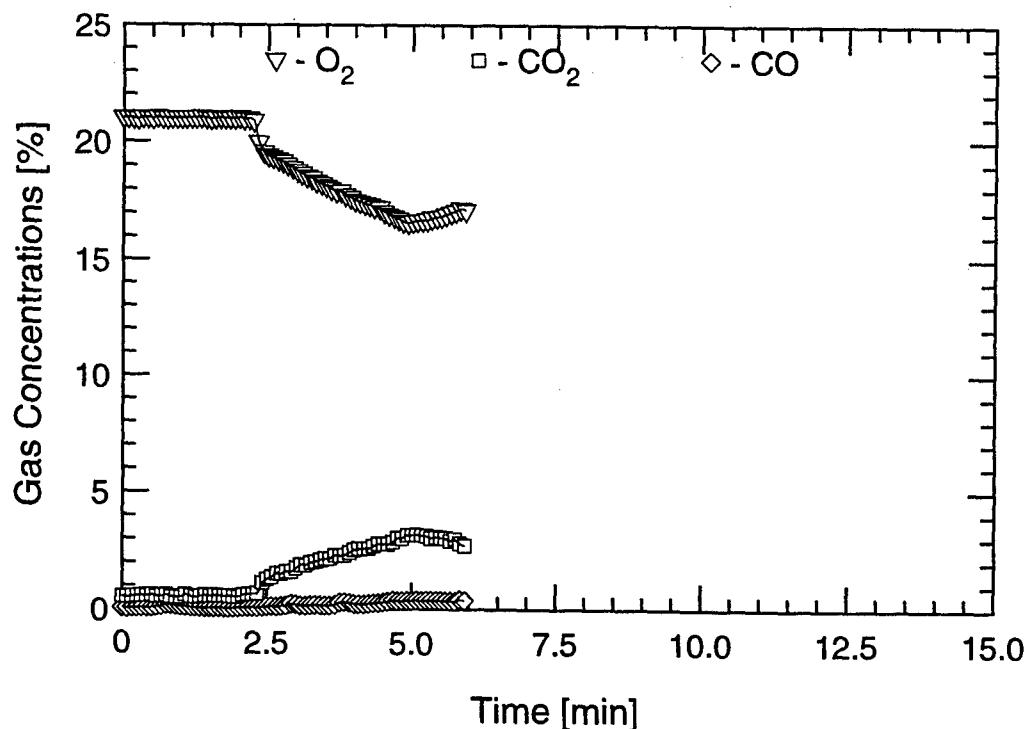
Aft Tree



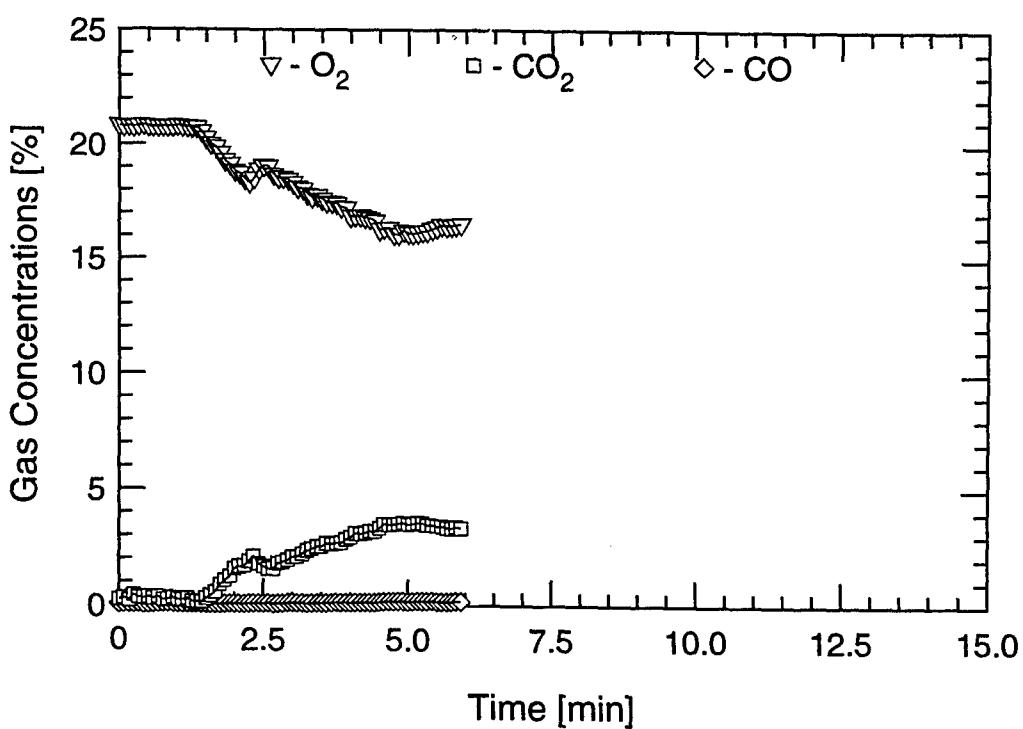
Forward Tree

TEST #29

B-172



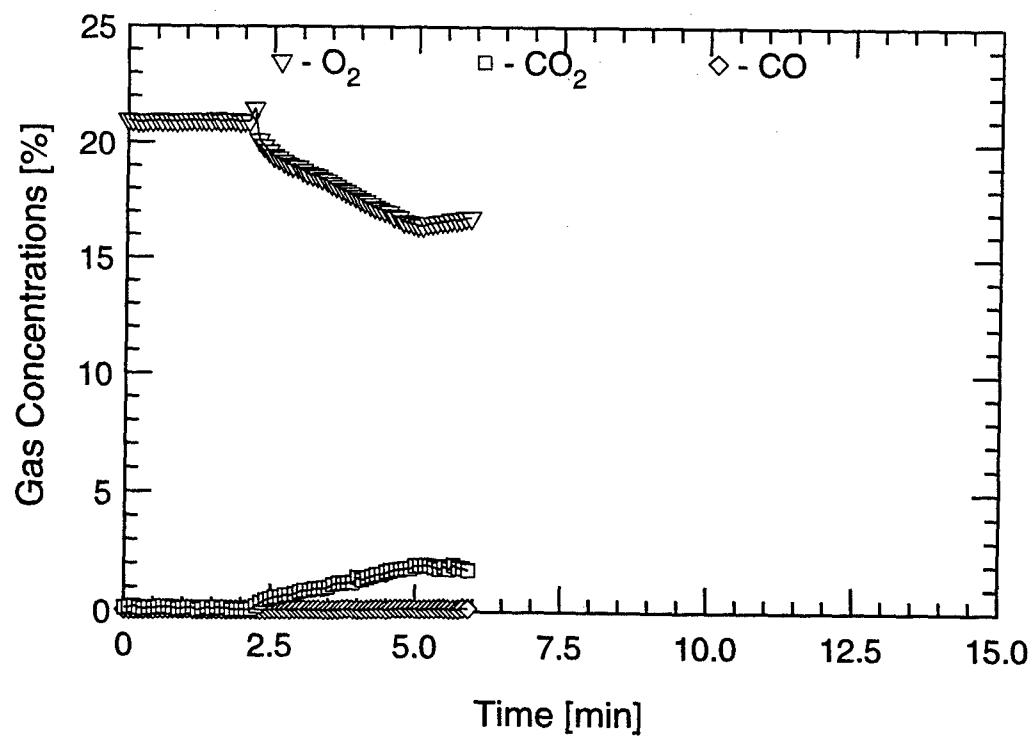
Aft Tree (Low)



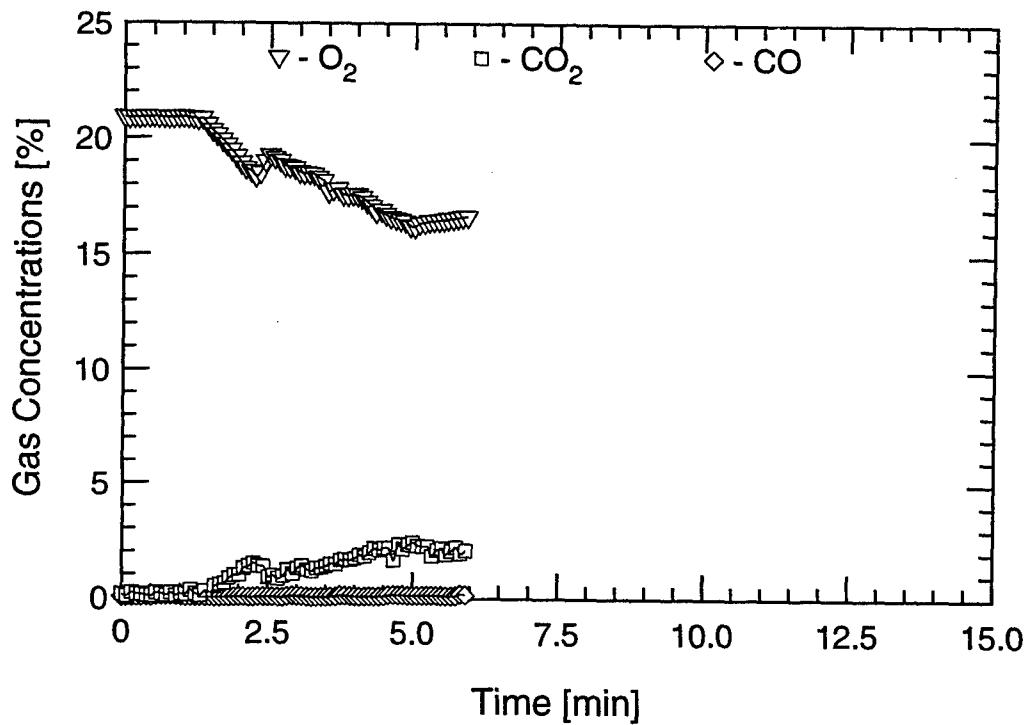
Aft Tree (High)

TEST #29

B-173



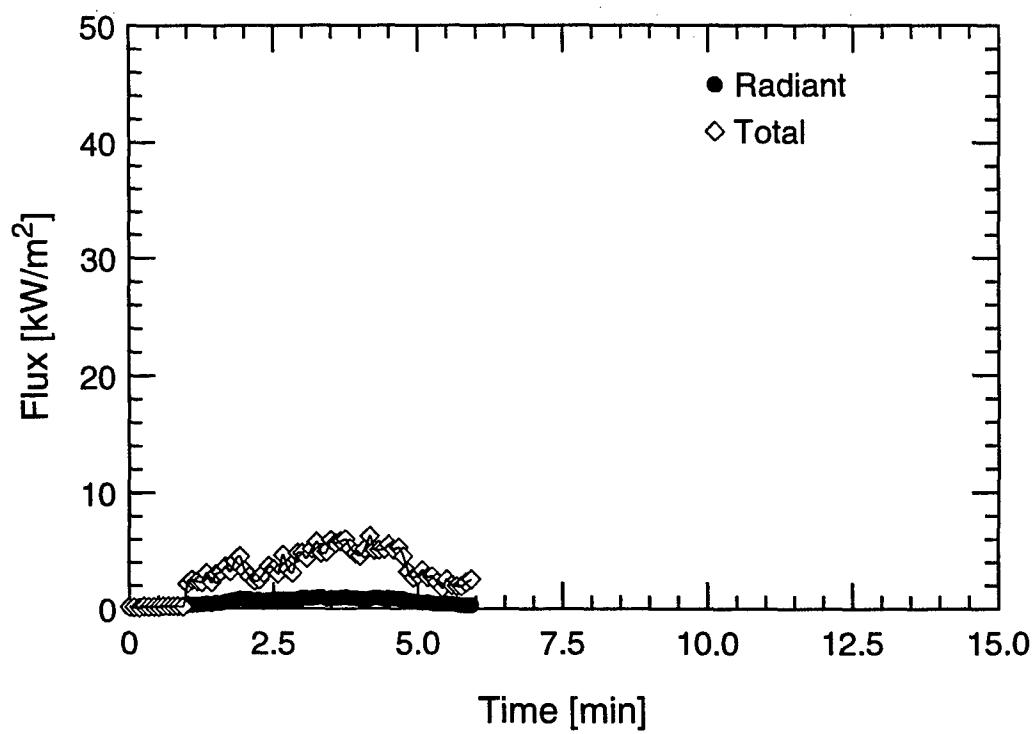
Forward Tree (Low)



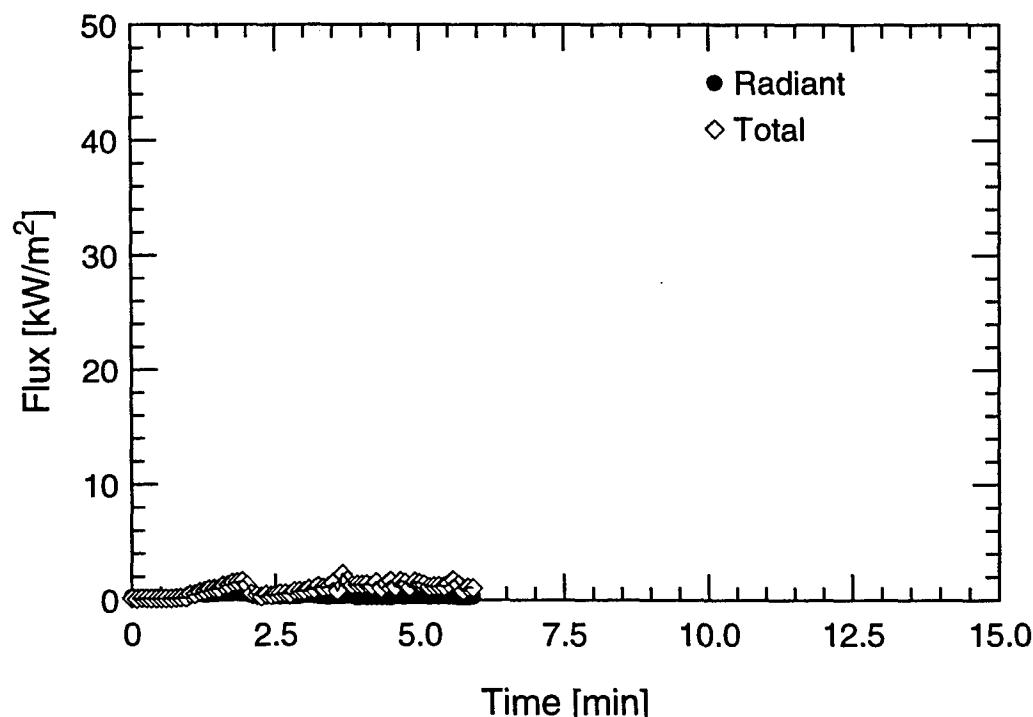
Forward Tree (High)

TEST #29

B-174

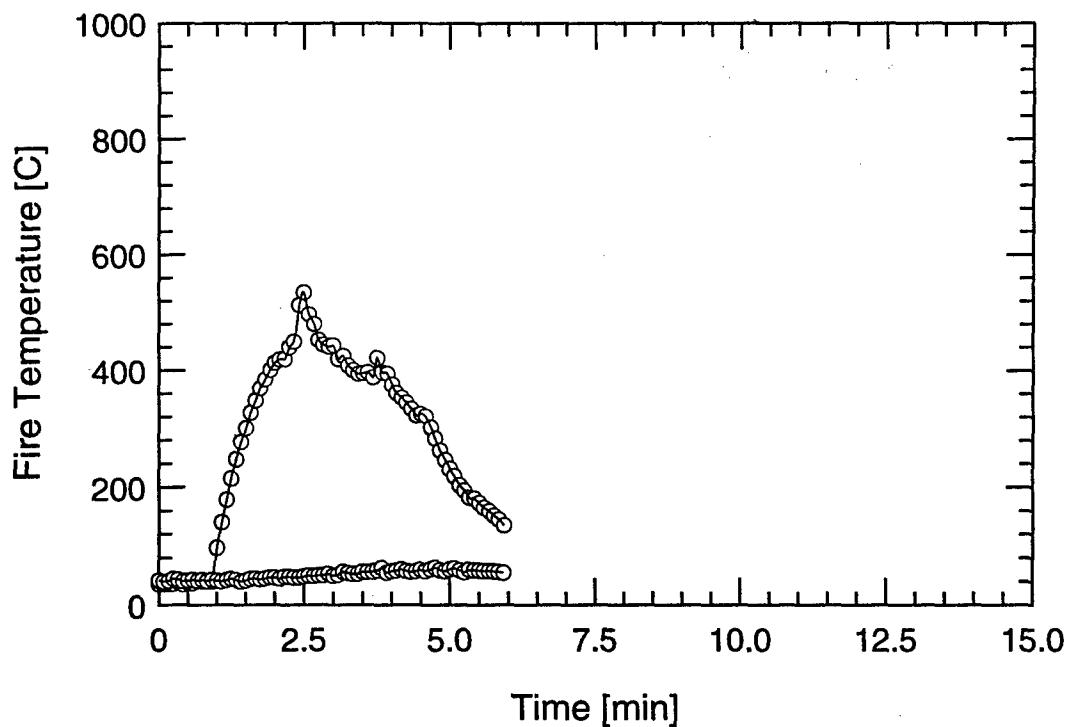


Overhead



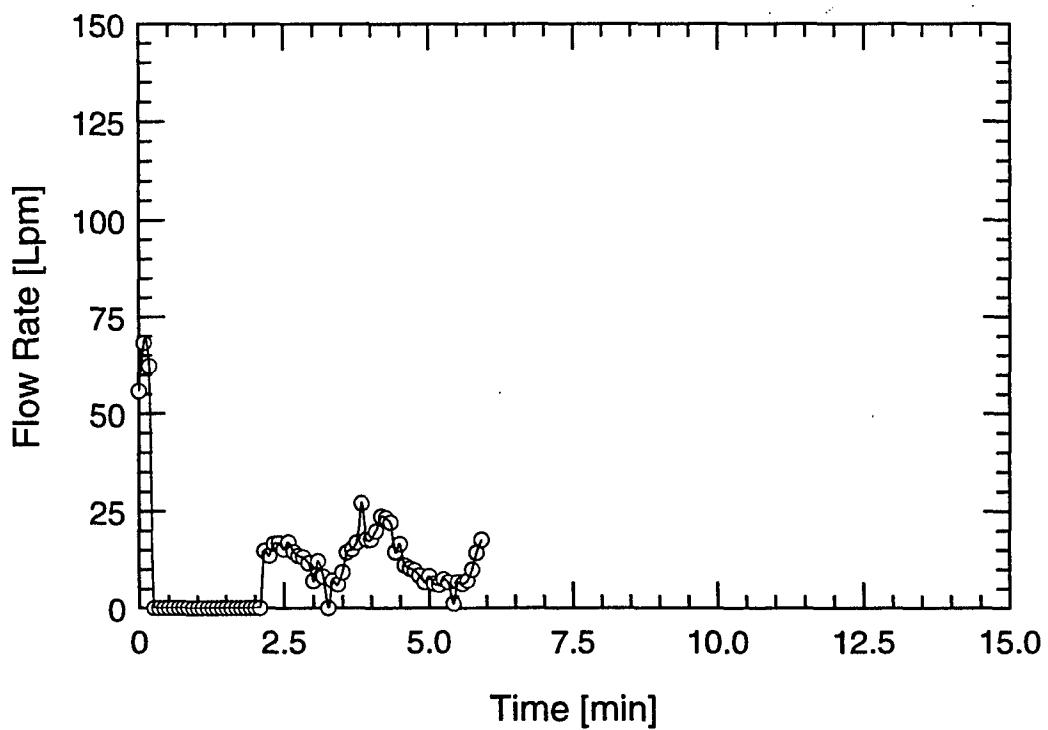
Forward Bulkhead

TEST #29

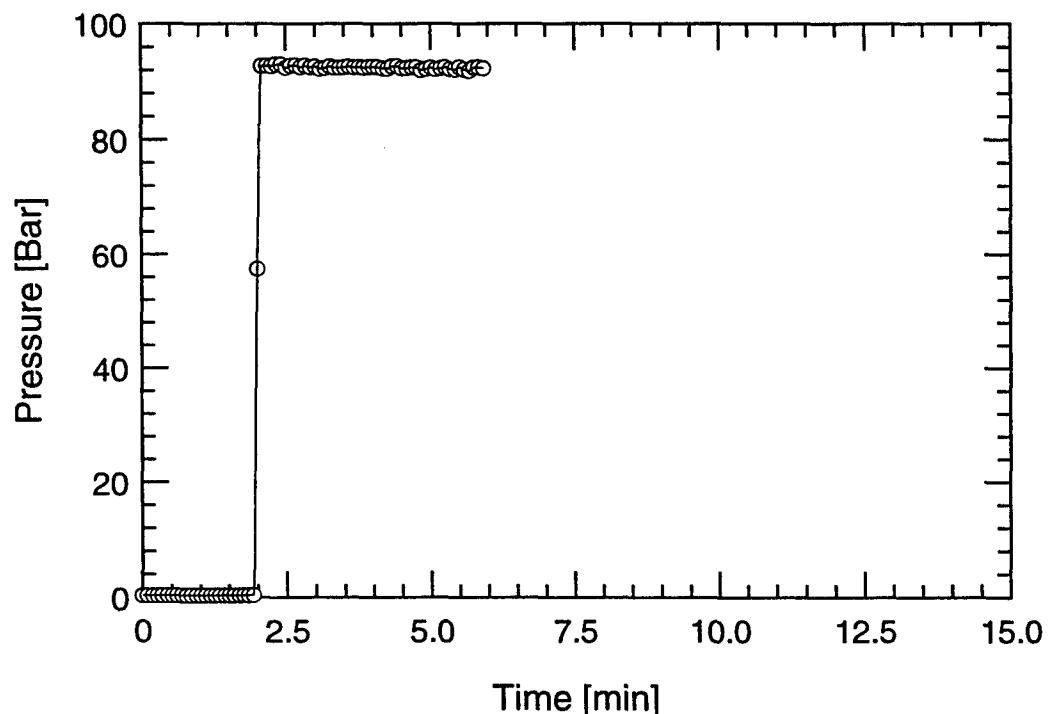


TEST #29

B-176

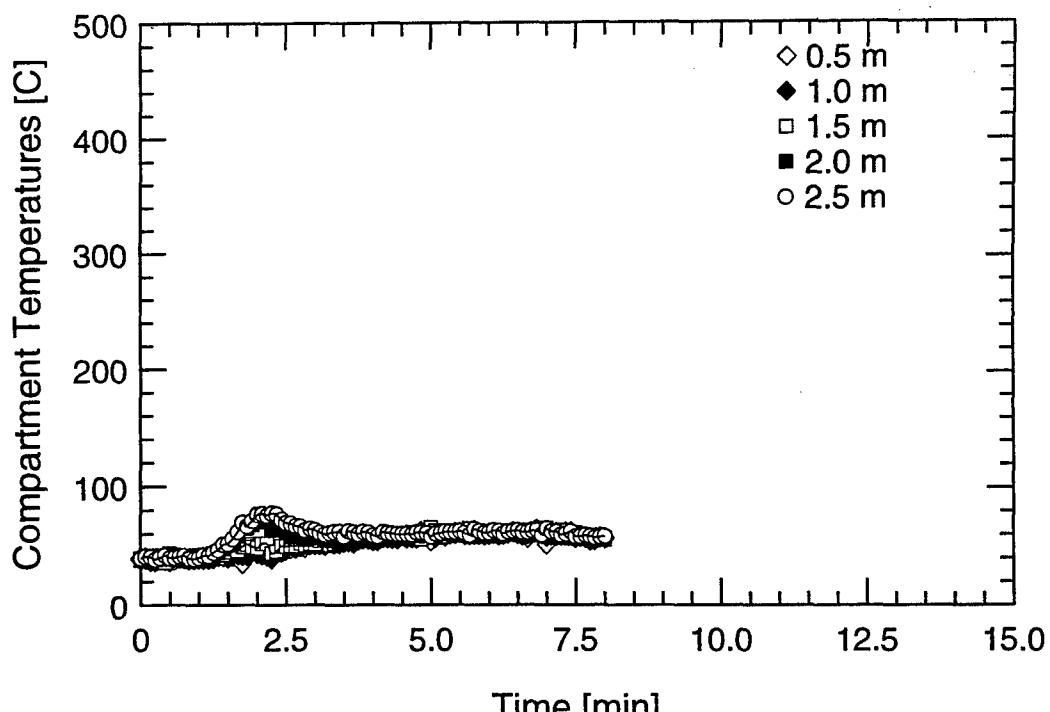


Water Mist System Flow Rate

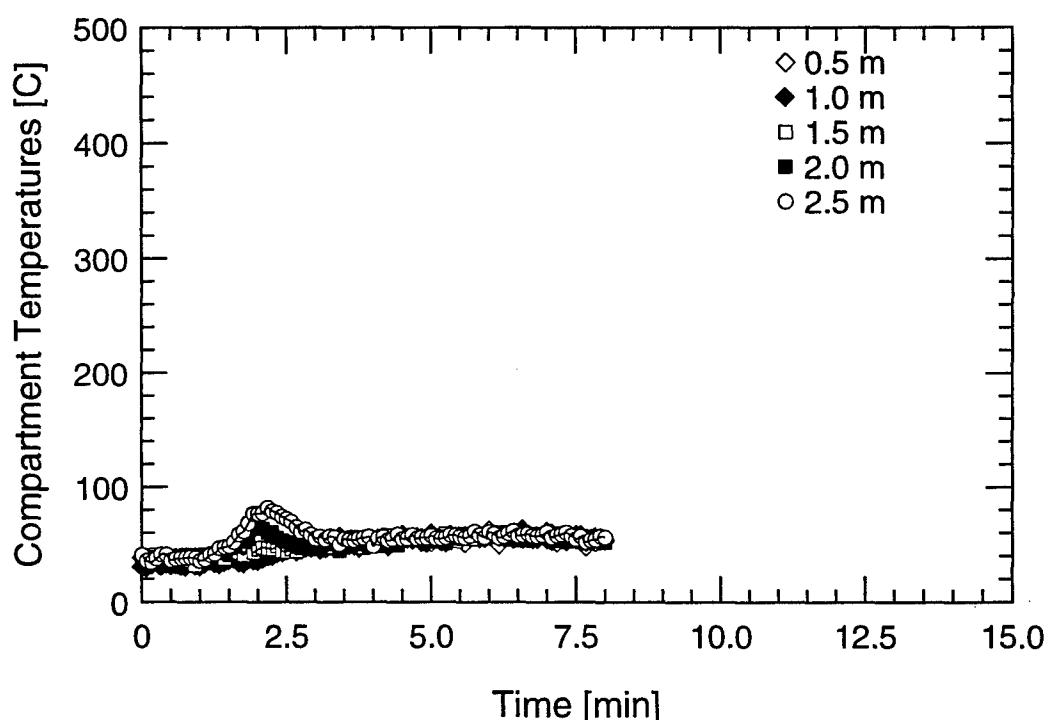


Water Mist System Pressure

TEST #29

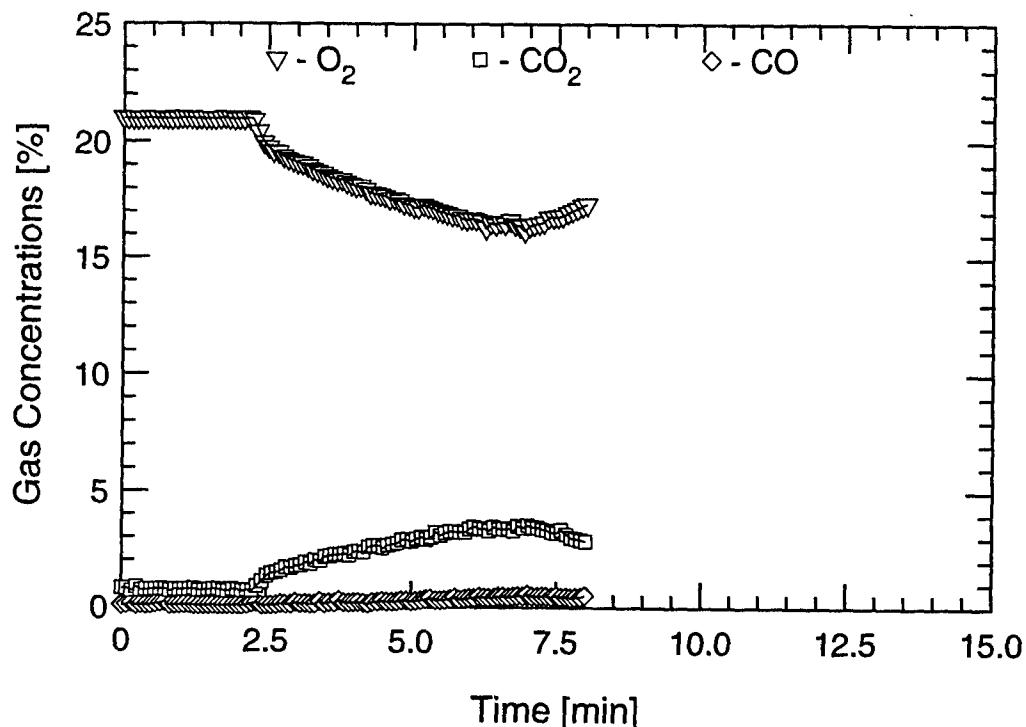


Aft Tree

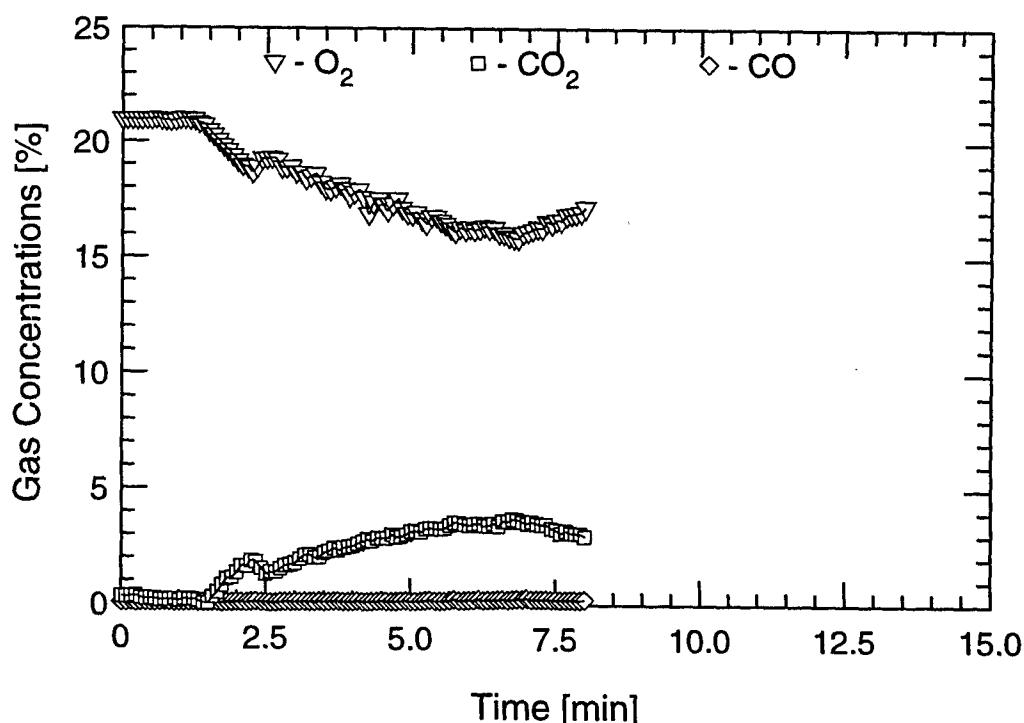


Forward Tree

TEST #30



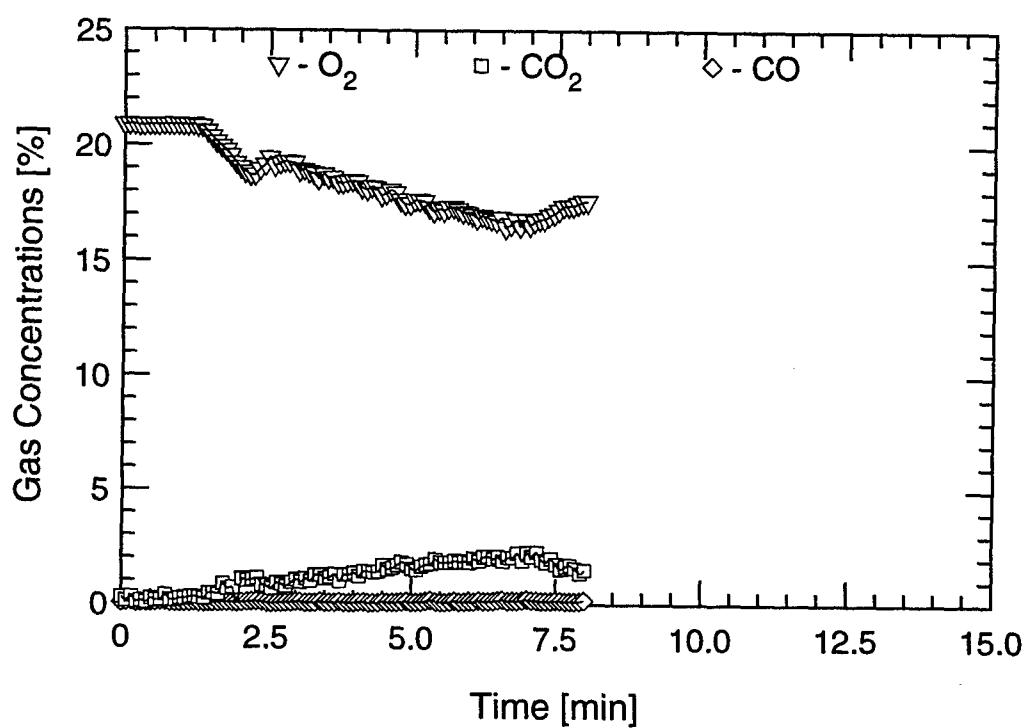
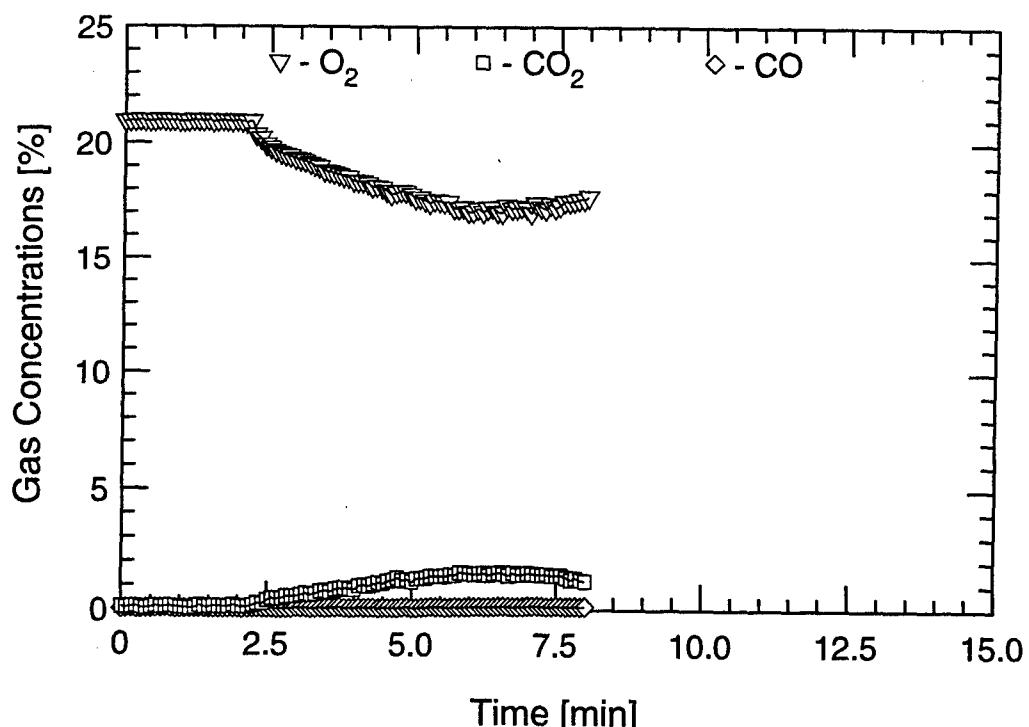
Aft Tree (Low)



Aft Tree (High)

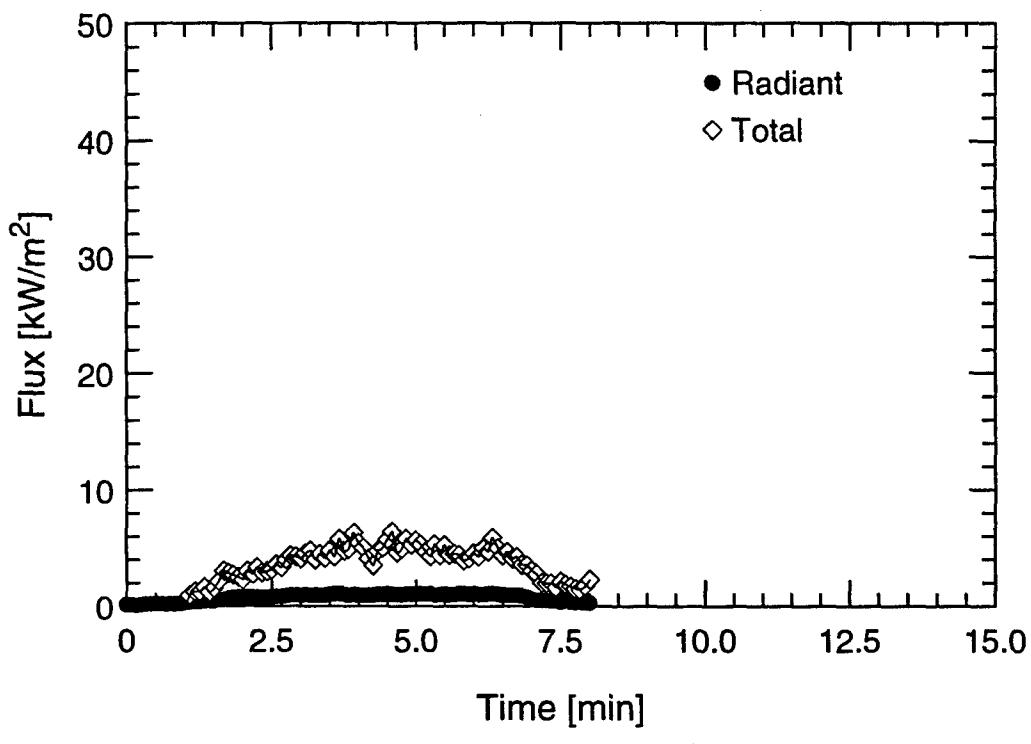
TEST #30

B-179

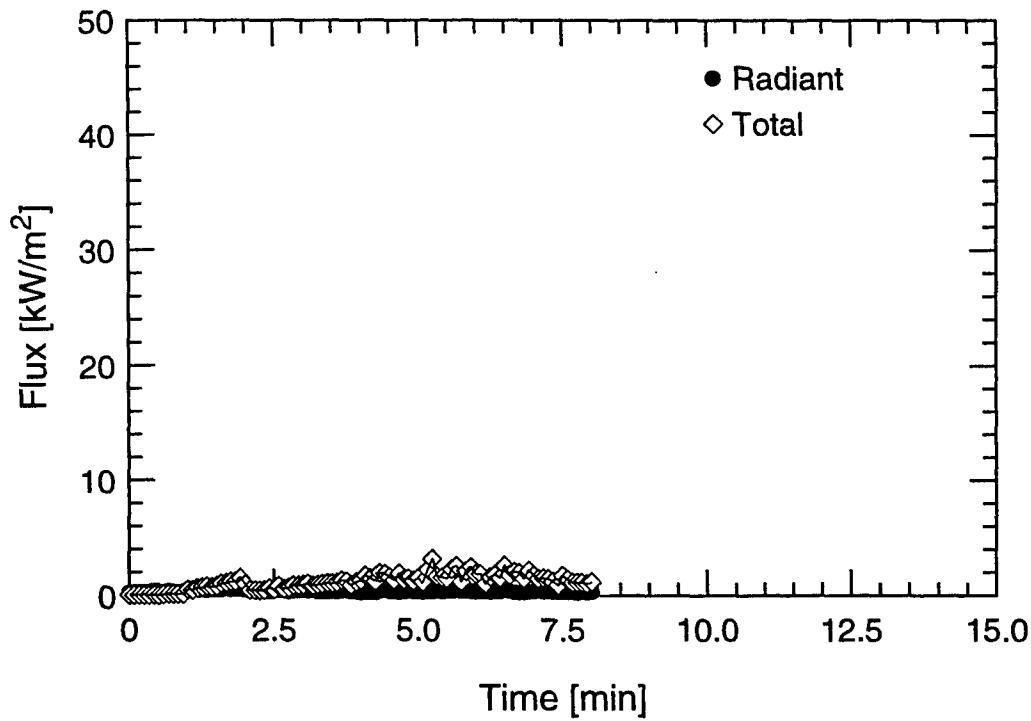


TEST #30

B-180



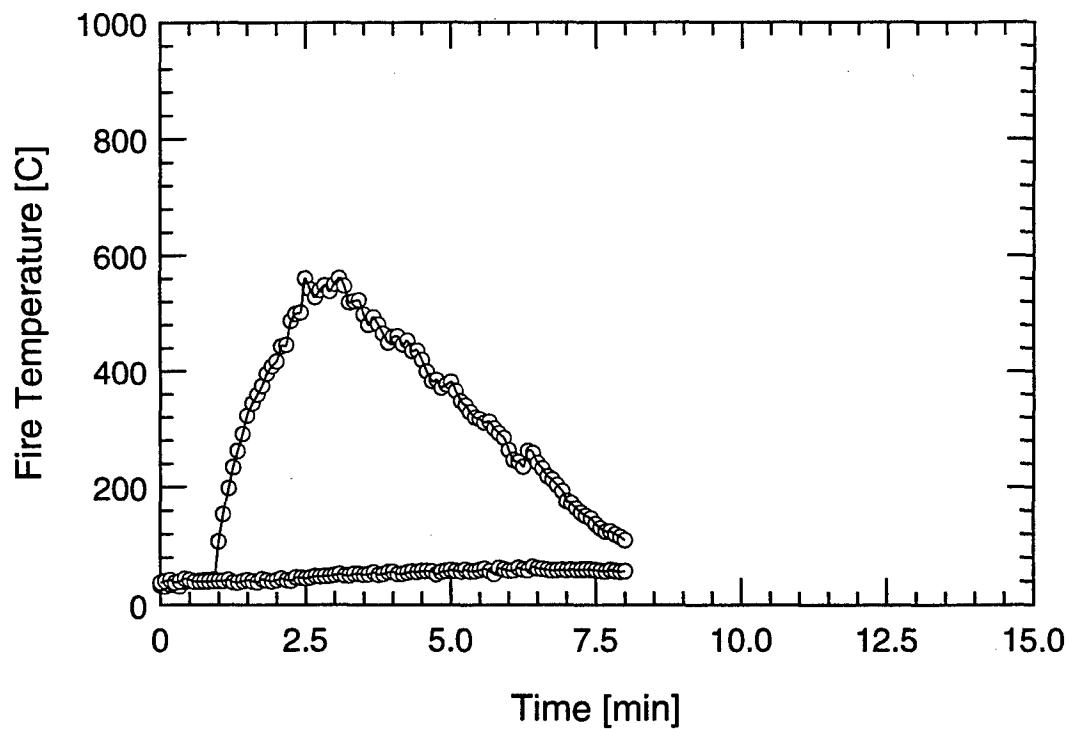
Overhead



Forward Bulkhead

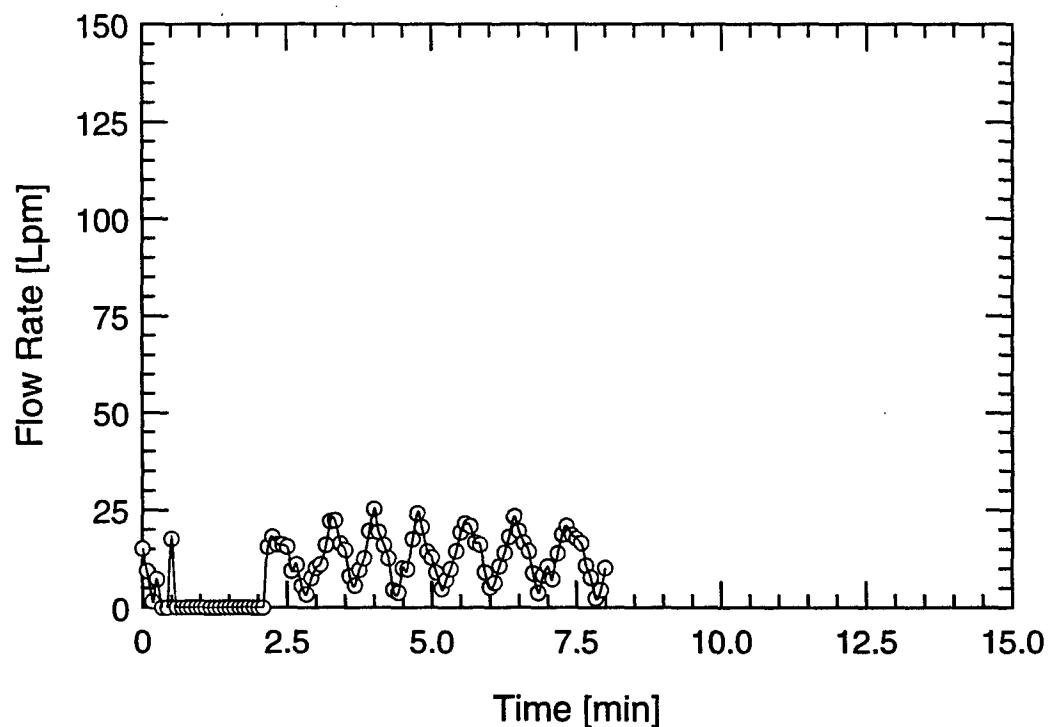
TEST #30

B-181

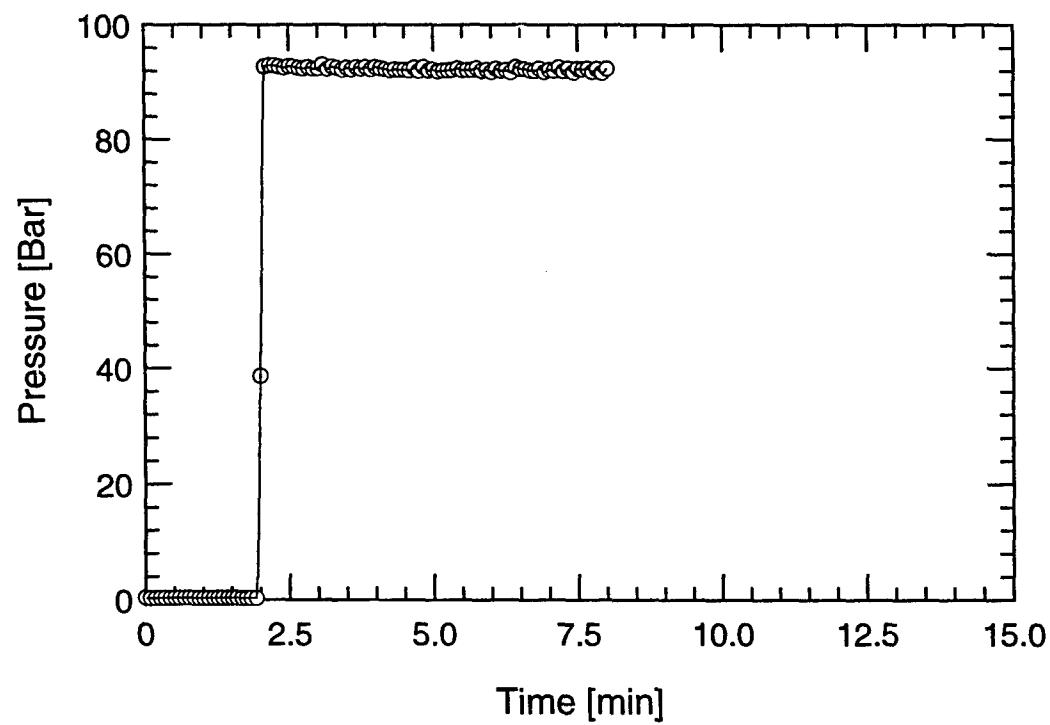


TEST #30

B-182



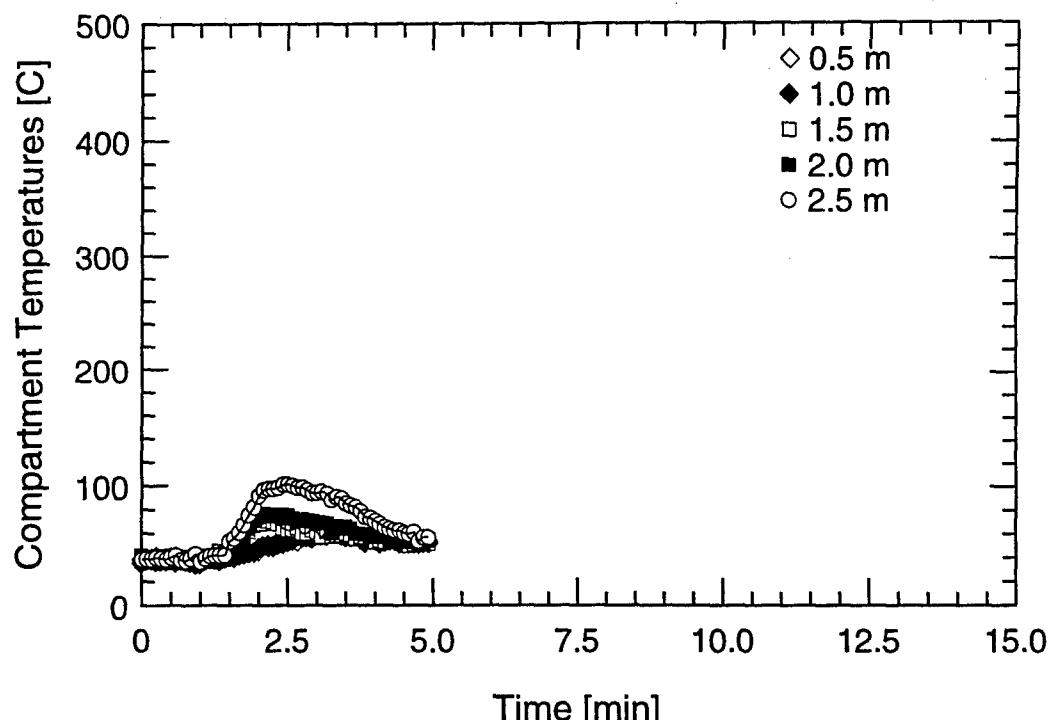
Water Mist System Flow Rate



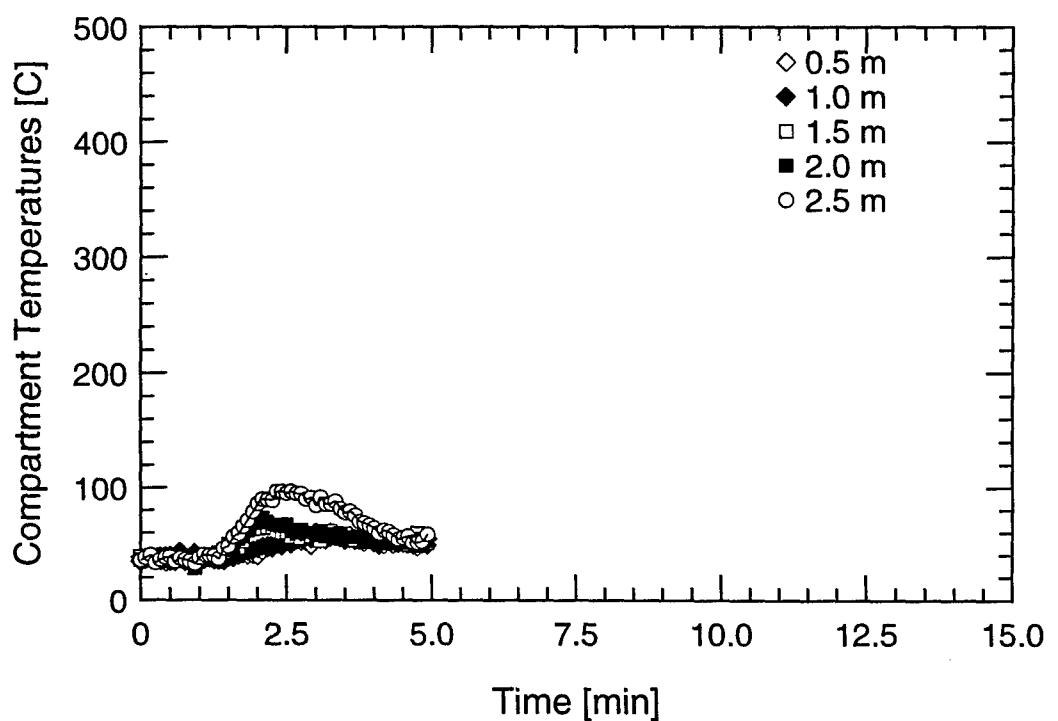
Water Mist System Pressure

TEST #30

B-183



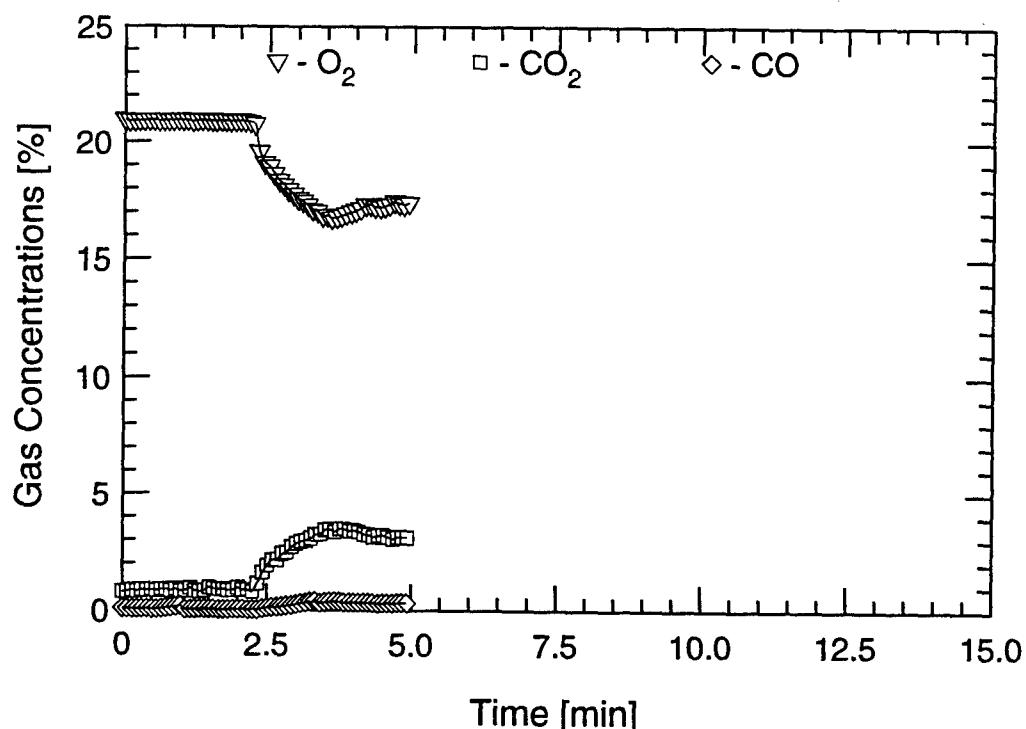
Aft Tree



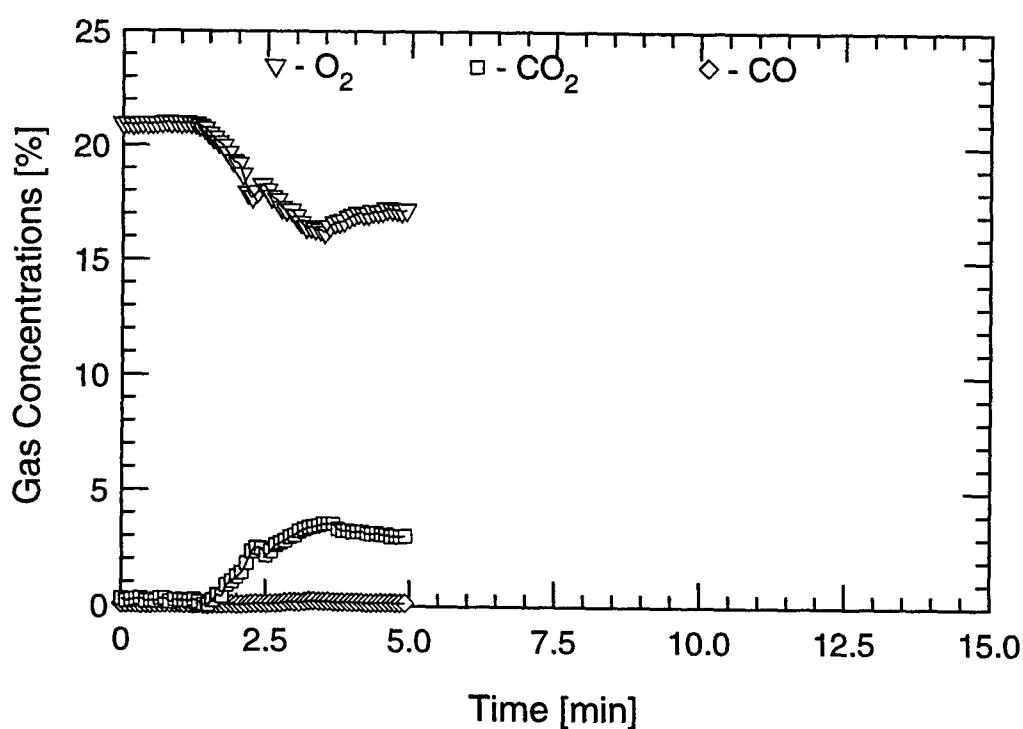
Forward Tree

TEST #31

B-184



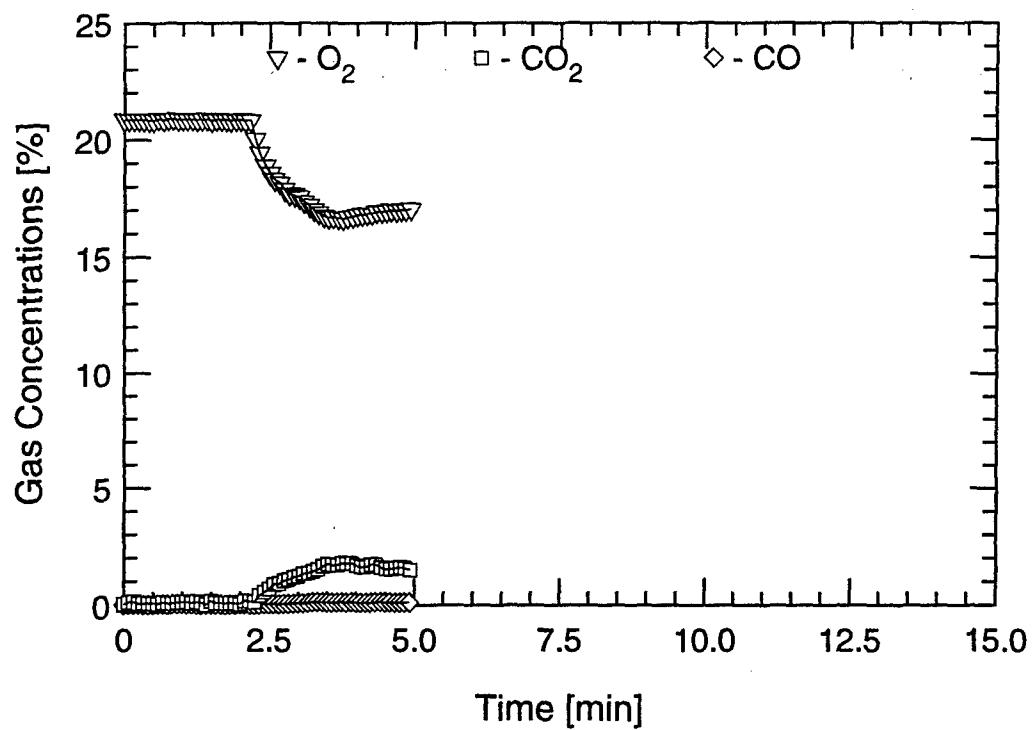
Aft Tree (Low)



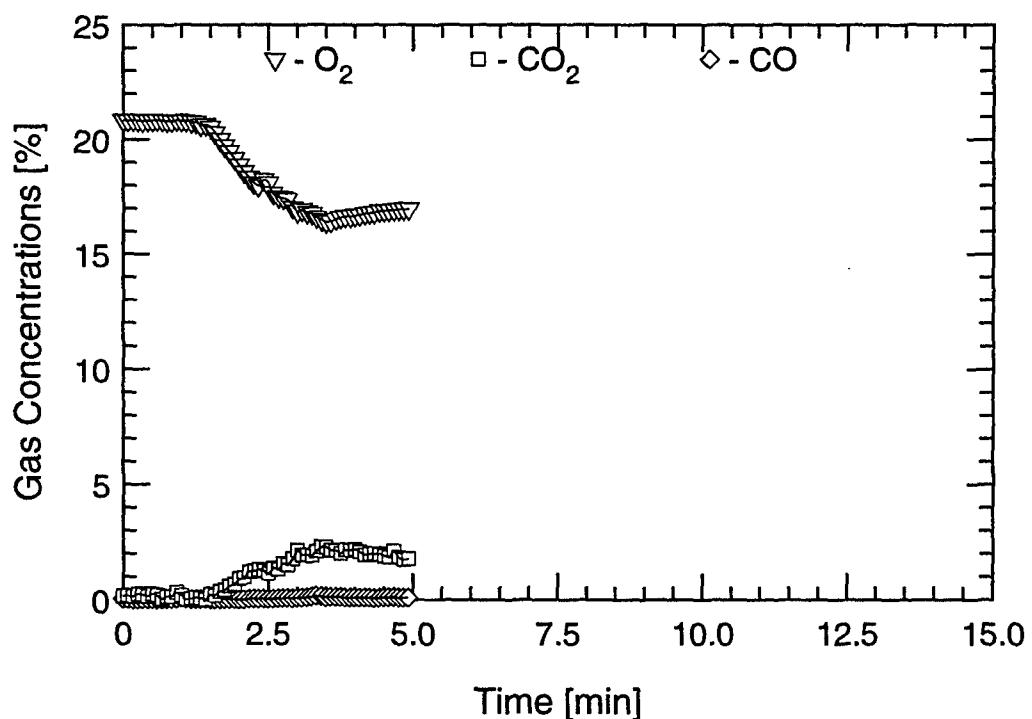
Aft Tree (High)

TEST #31

B-185



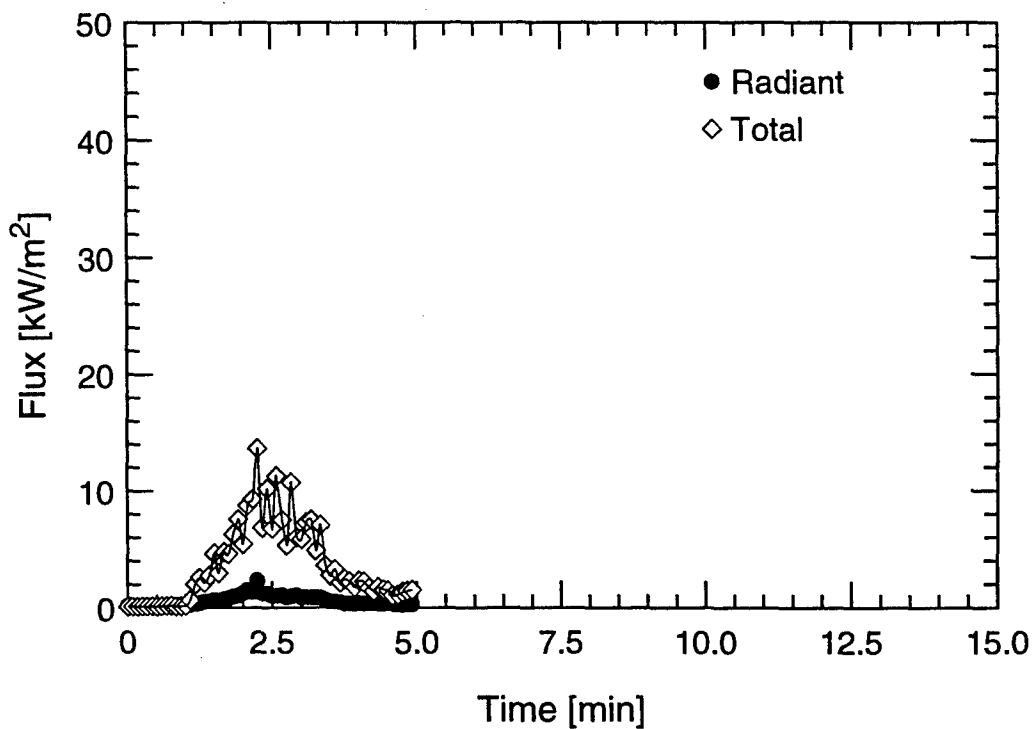
Forward Tree (Low)



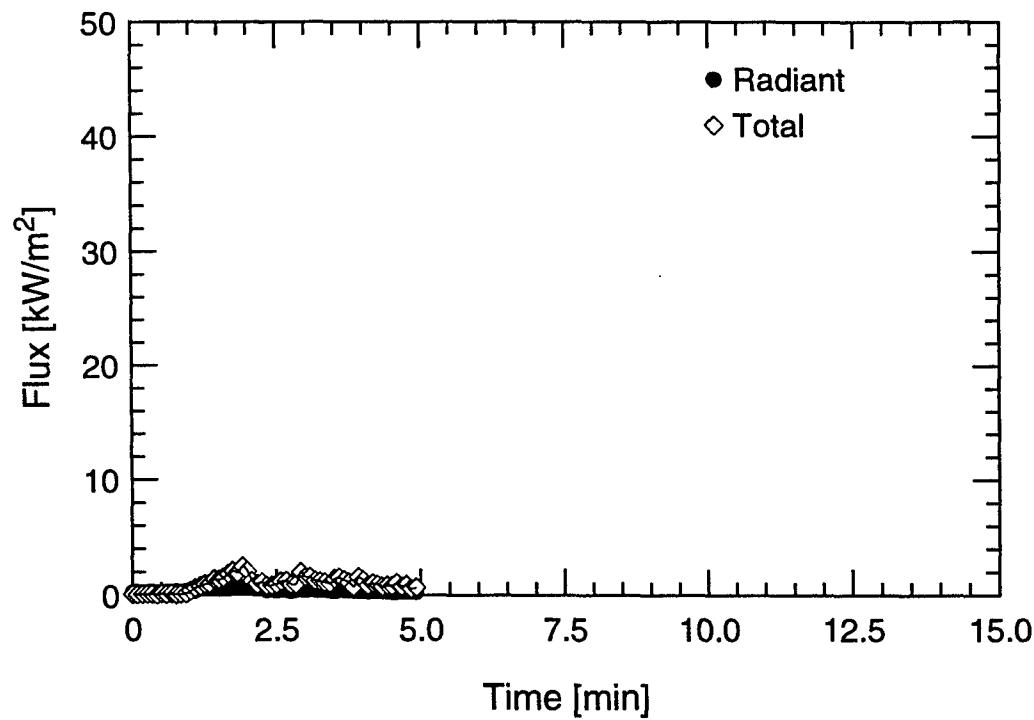
Forward Tree (High)

TEST #31

B-186



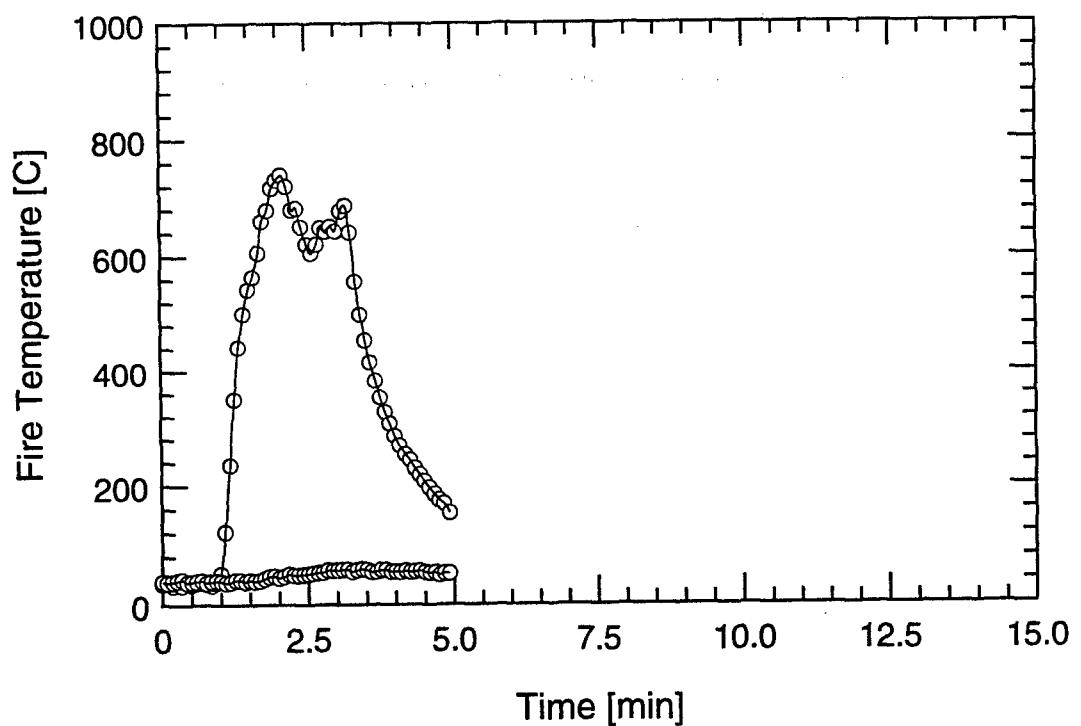
Overhead



Forward Bulkhead

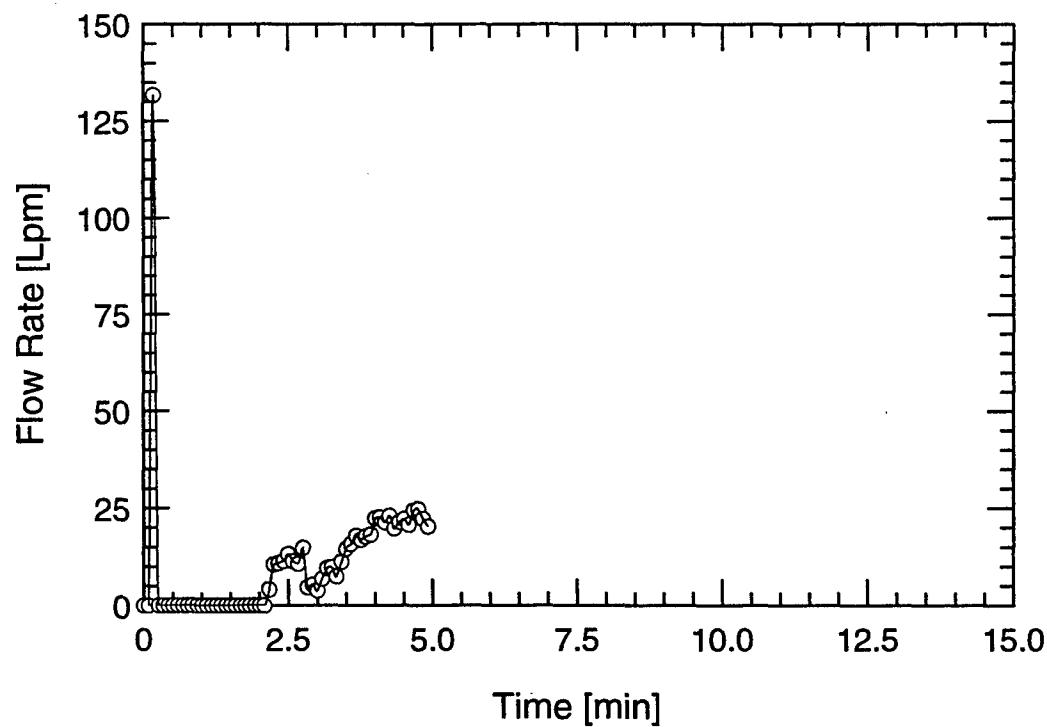
TEST #31

B-187

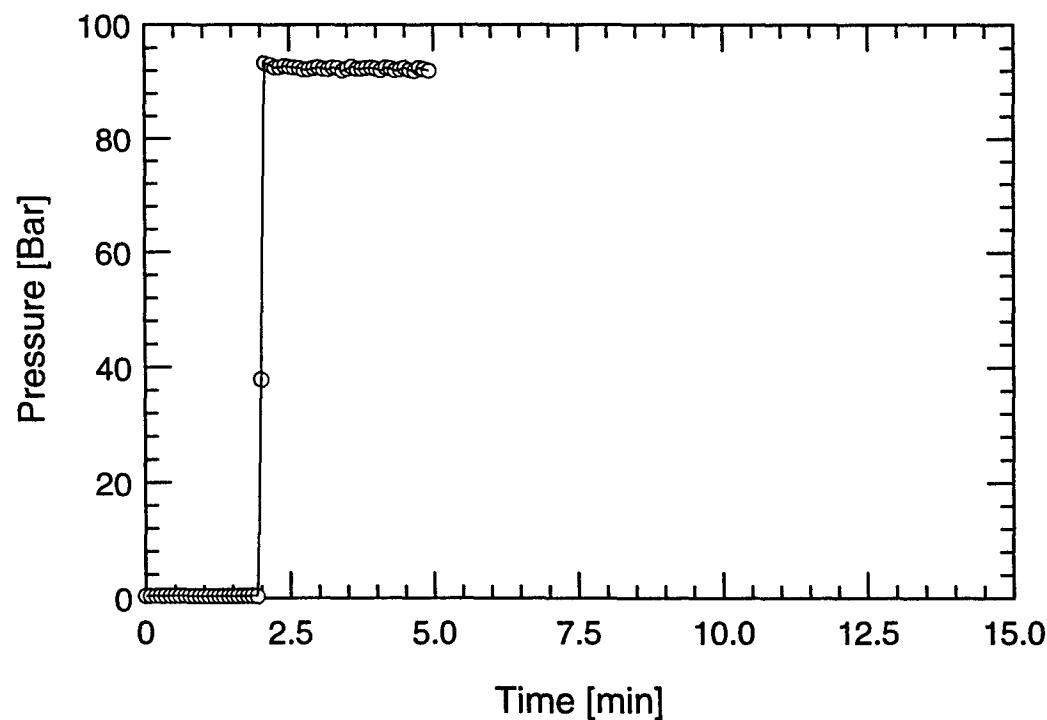


TEST #31

B-188



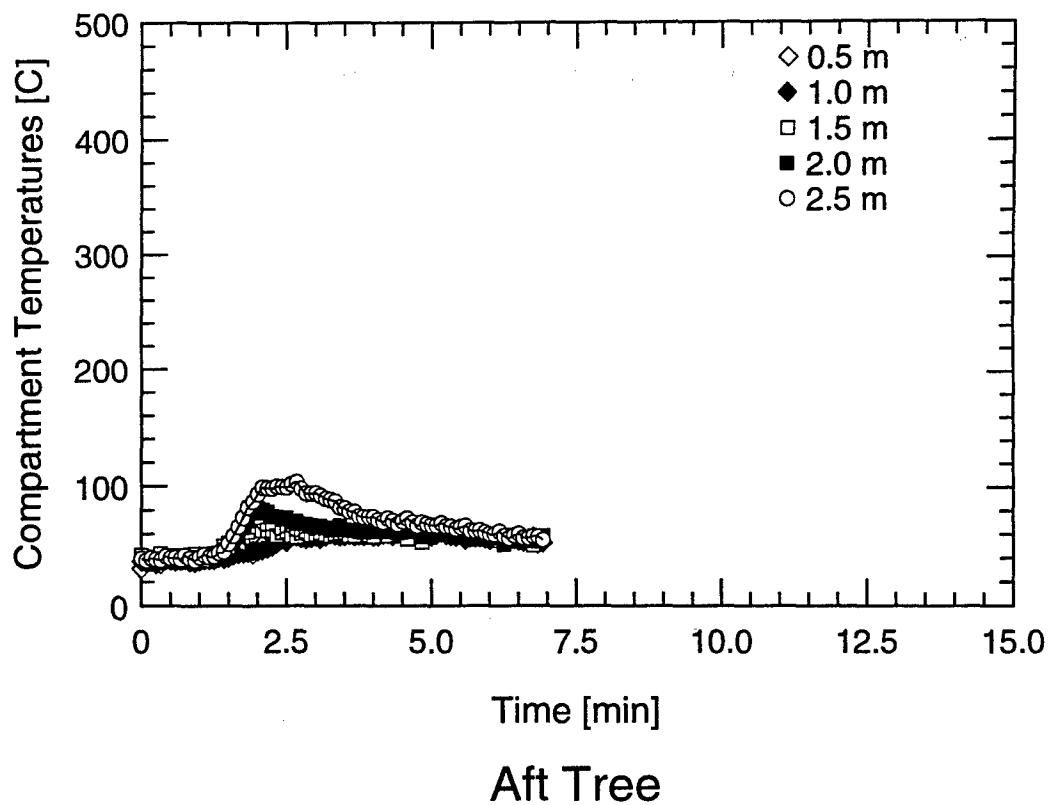
Water Mist System Flow Rate



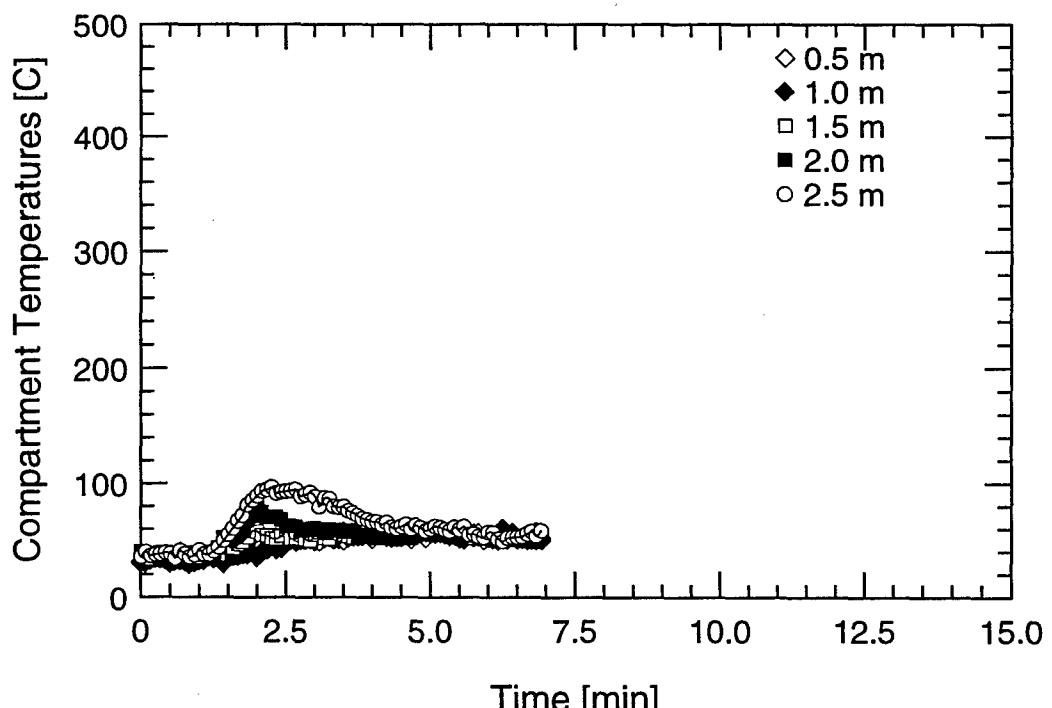
Water Mist System Pressure

TEST #31

B-189

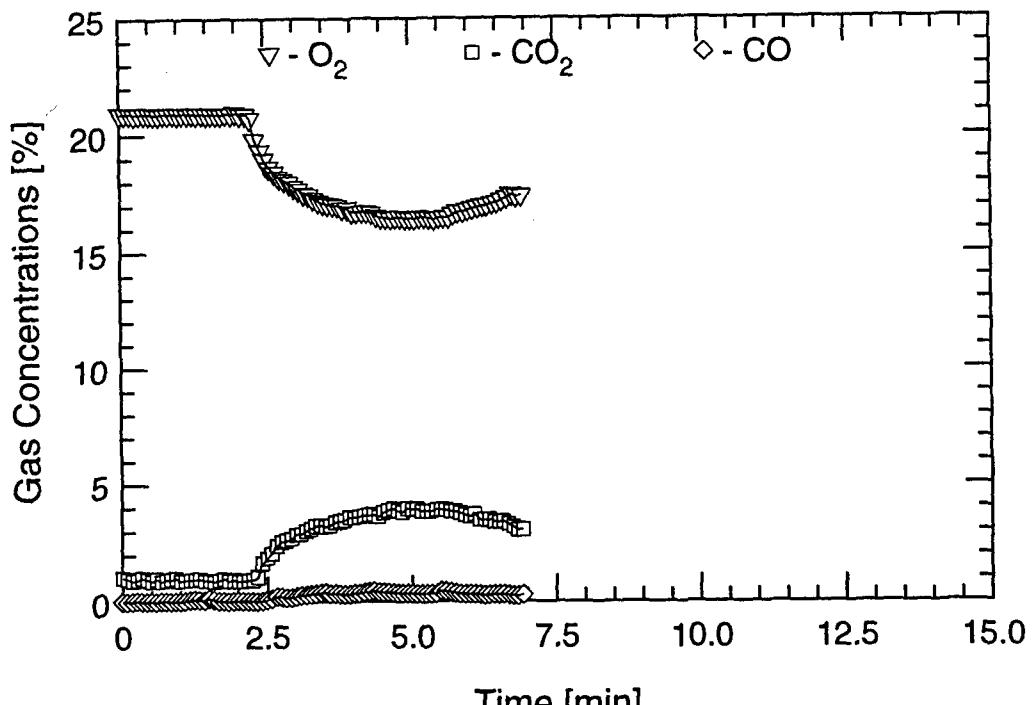


Aft Tree

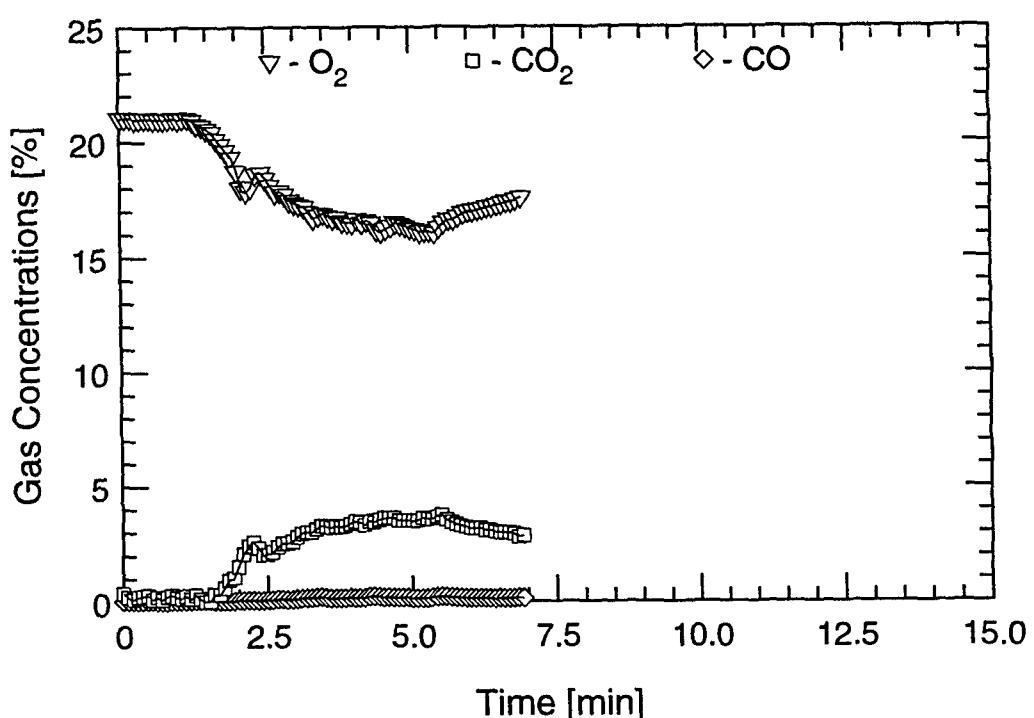


Forward Tree

TEST #32



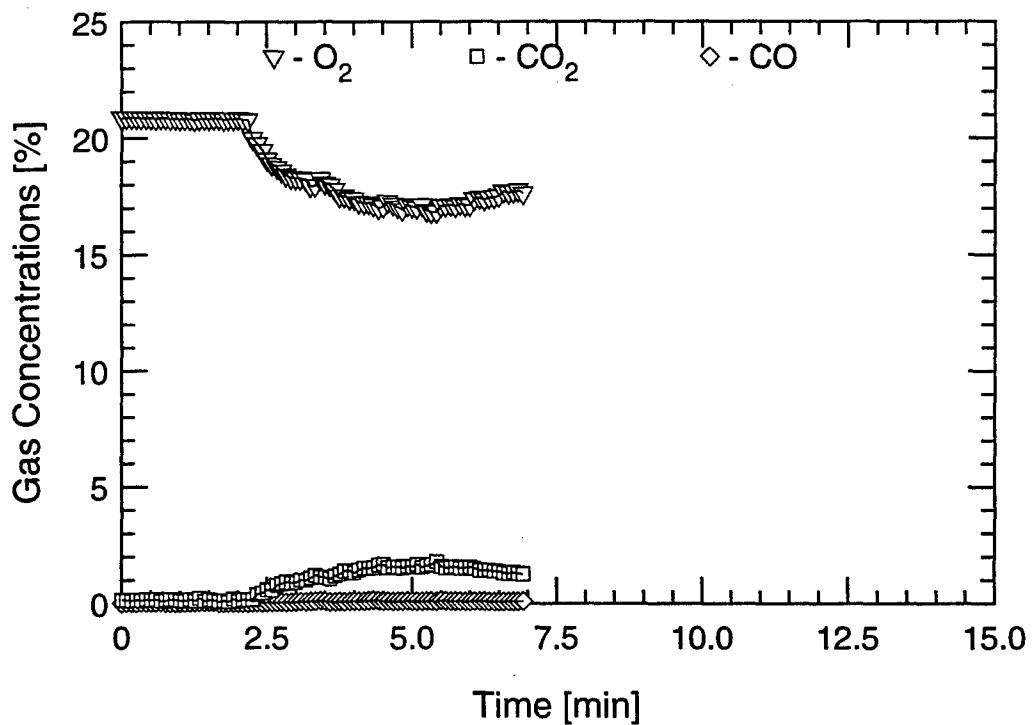
Aft Tree (Low)



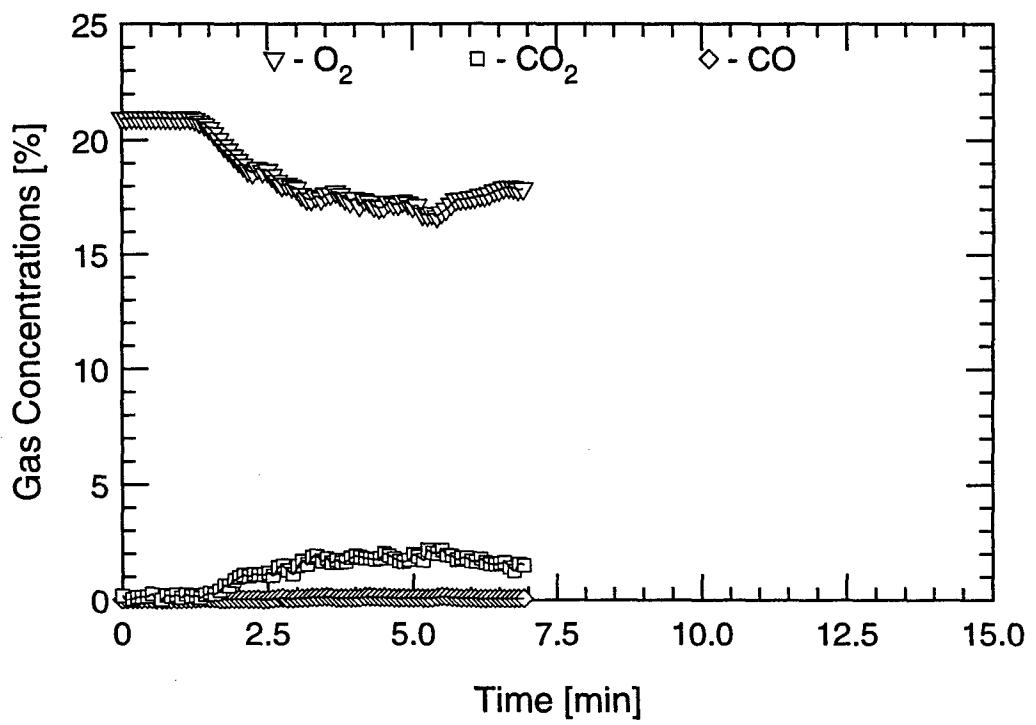
Aft Tree (High)

TEST #32

B-191



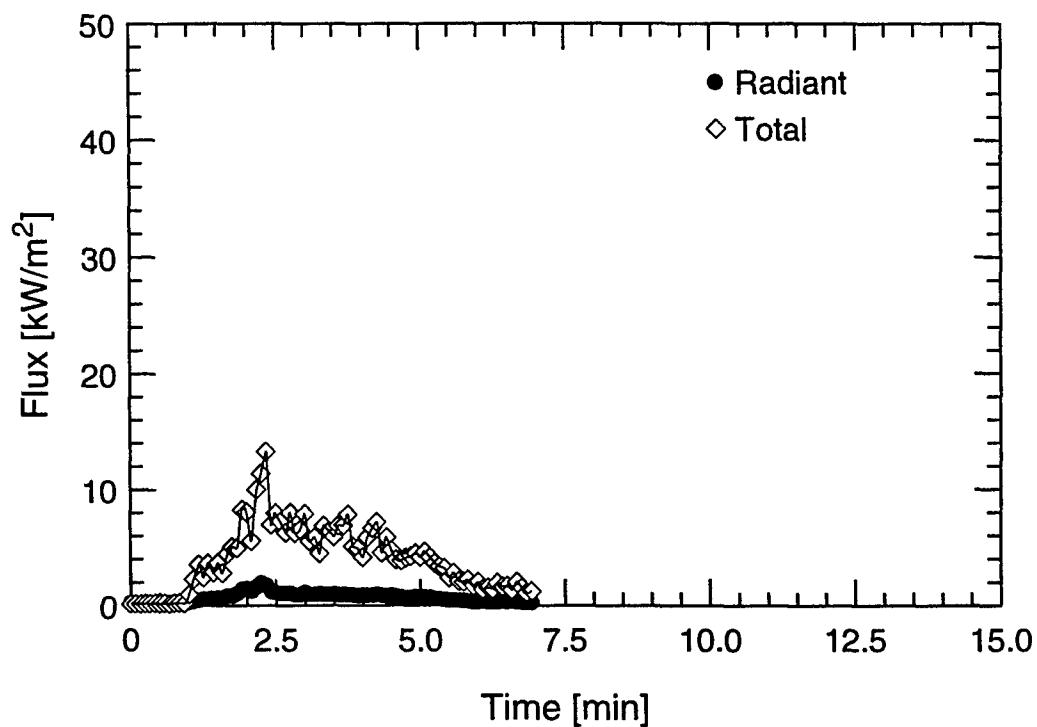
Forward Tree (Low)



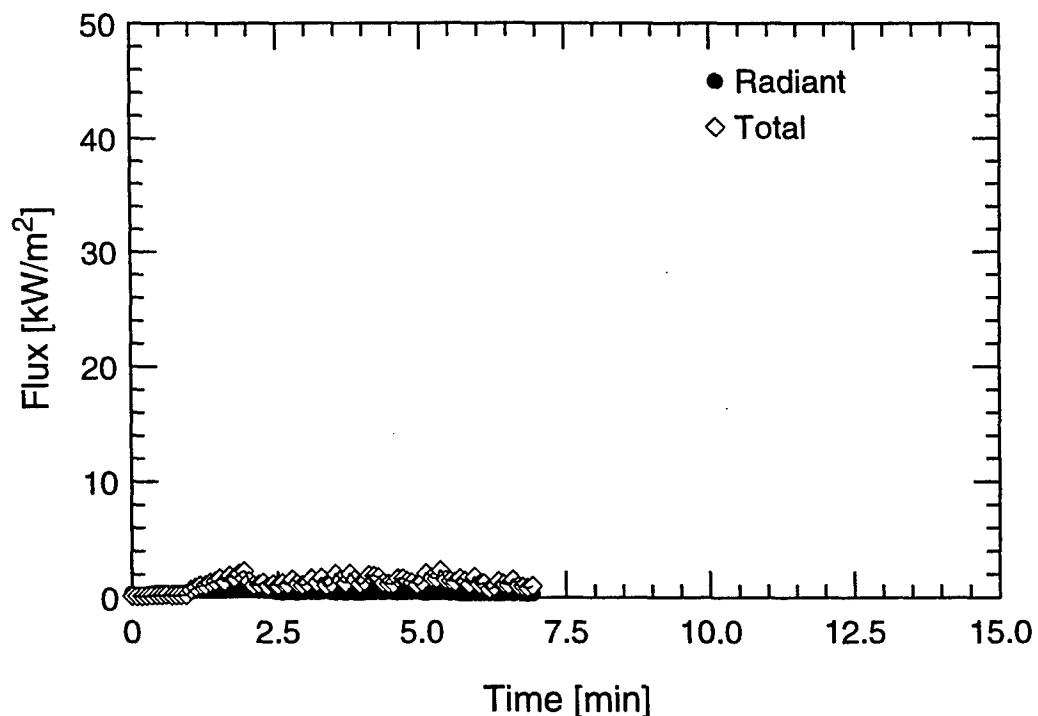
Forward Tree (High)

TEST #32

B-192



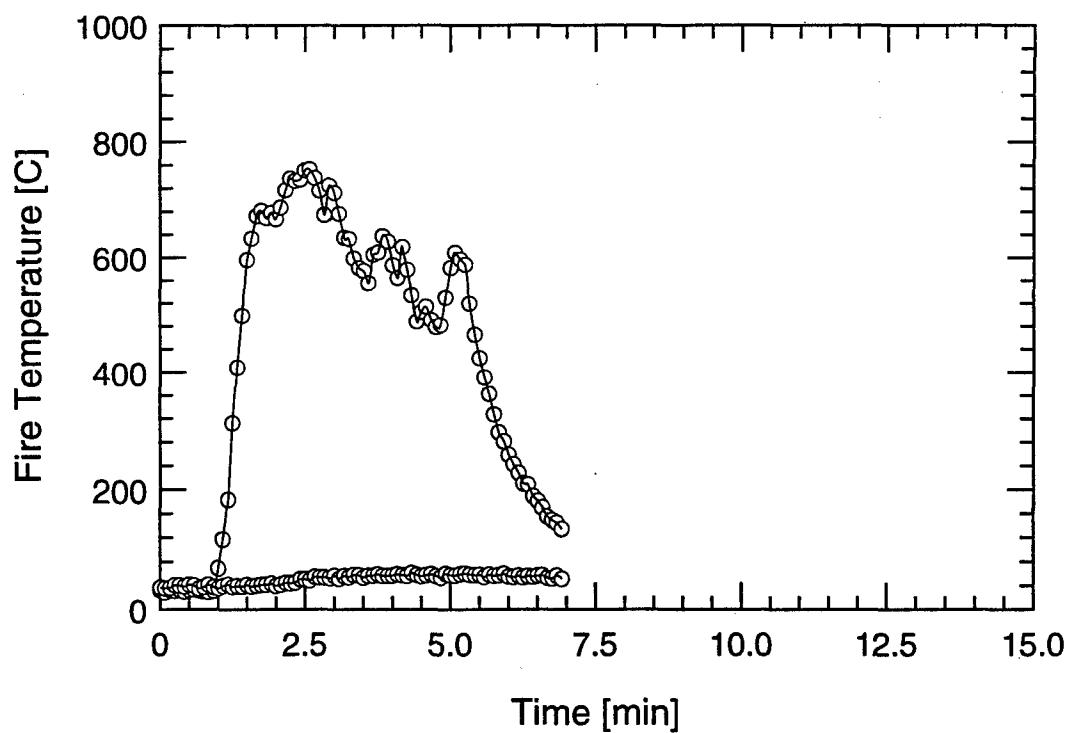
Overhead



Forward Bulkhead

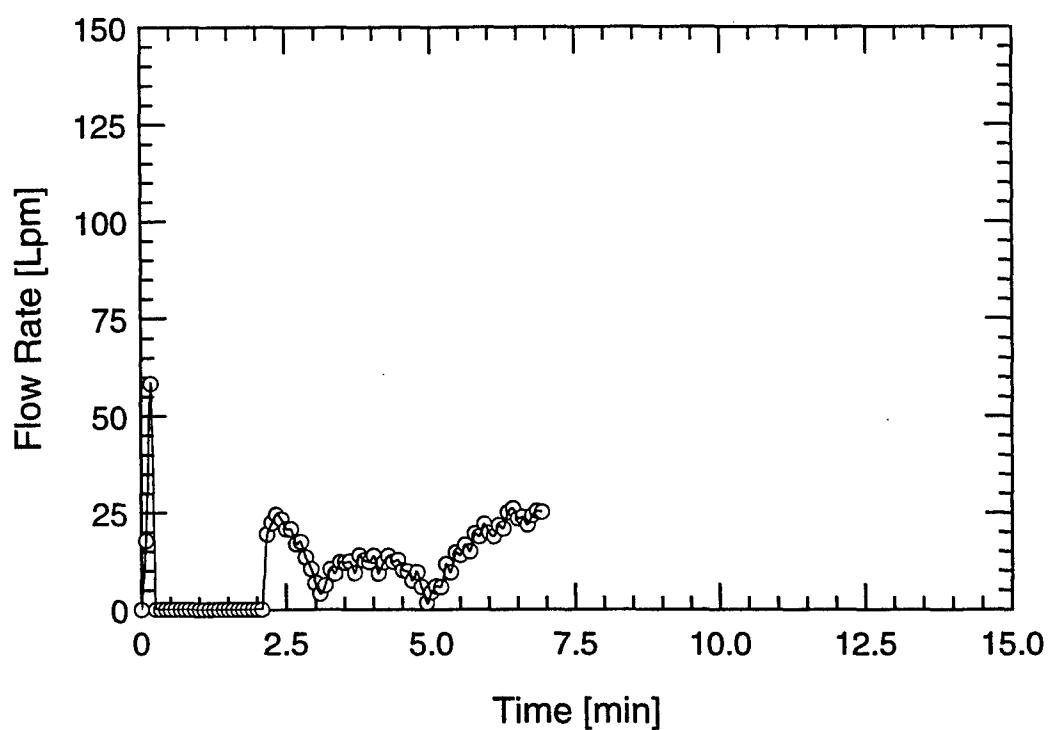
TEST #32

B-193

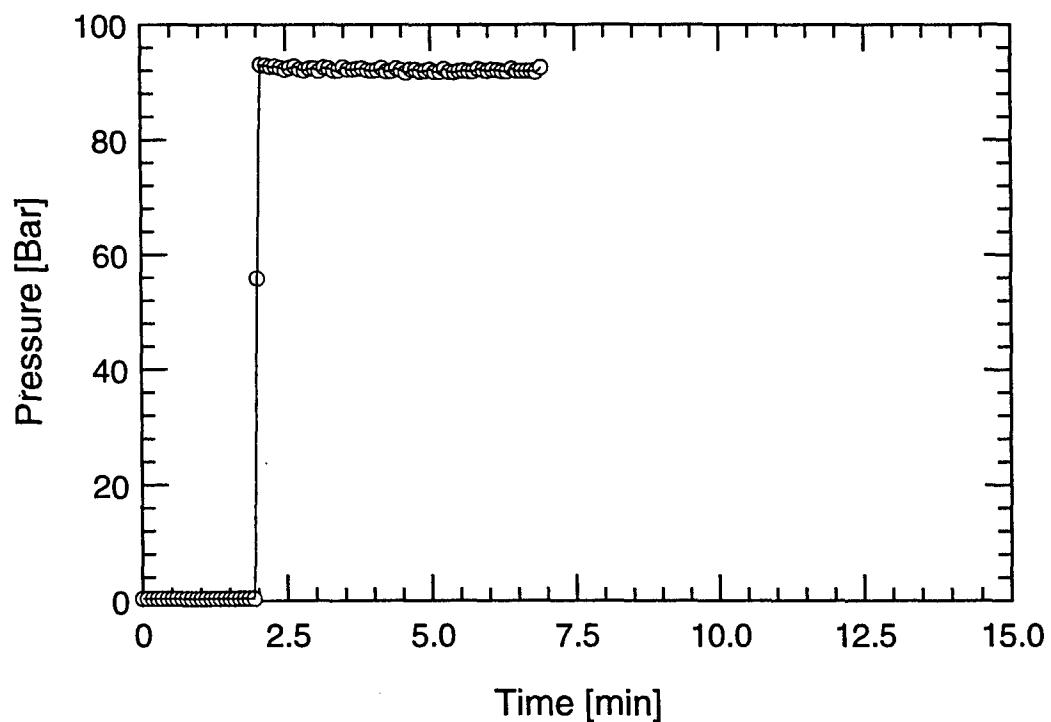


TEST #32

B-194



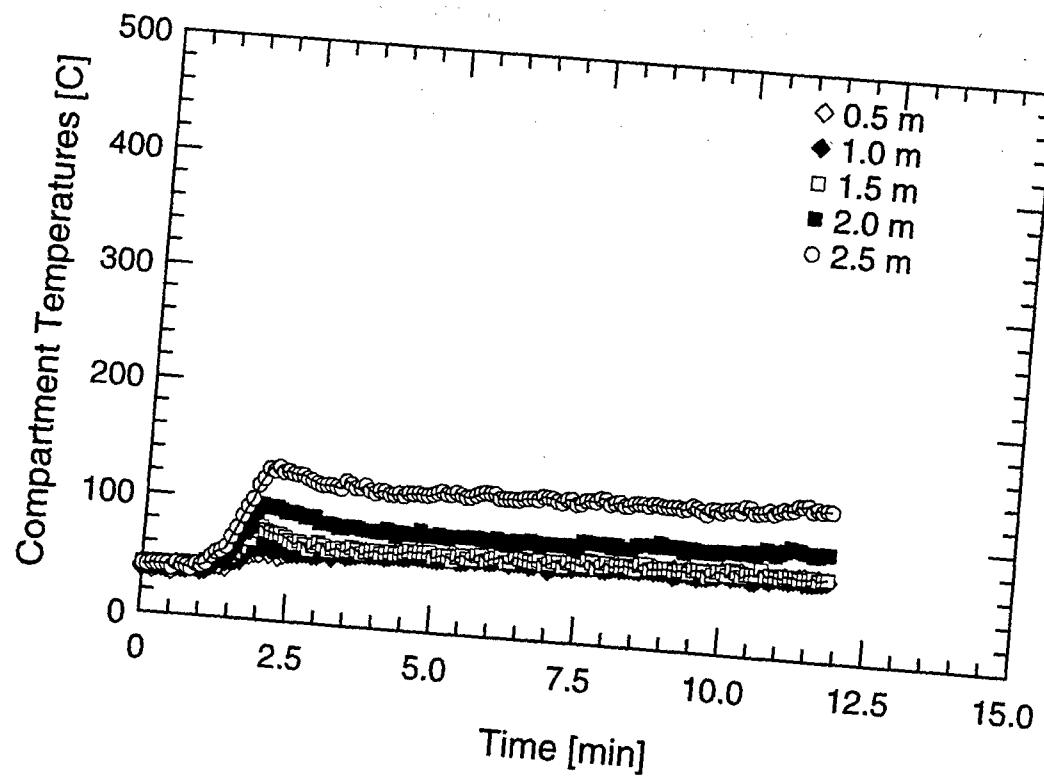
Water Mist System Flow Rate



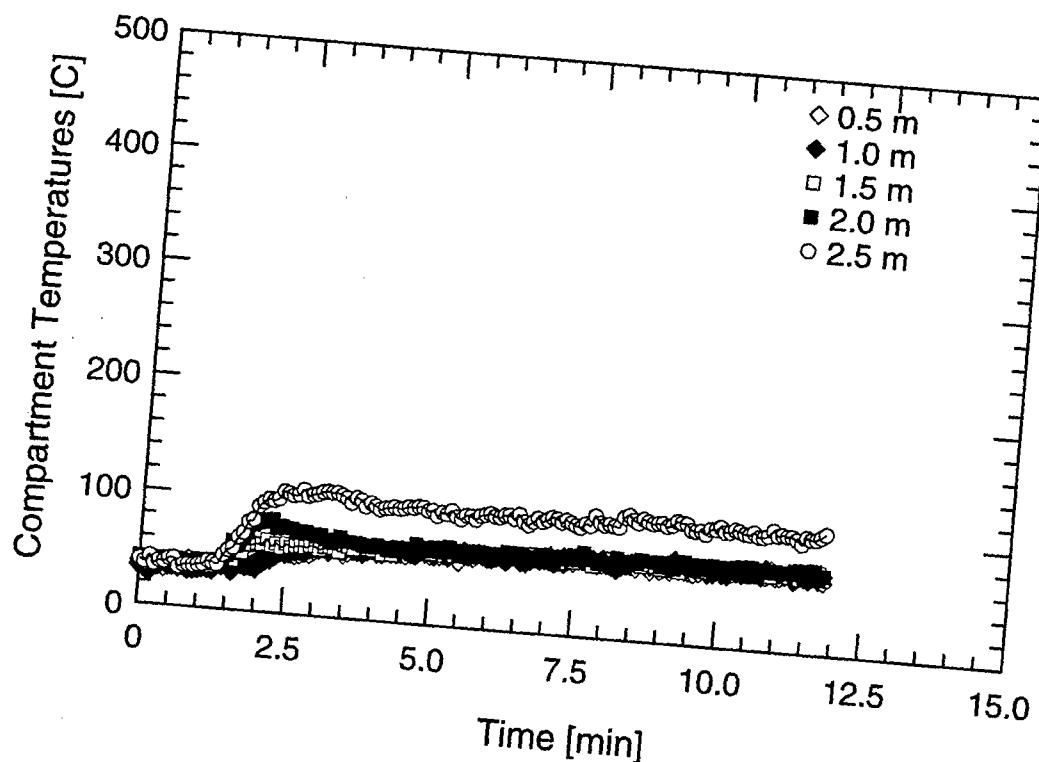
Water Mist System Pressure

TEST #32

B-195



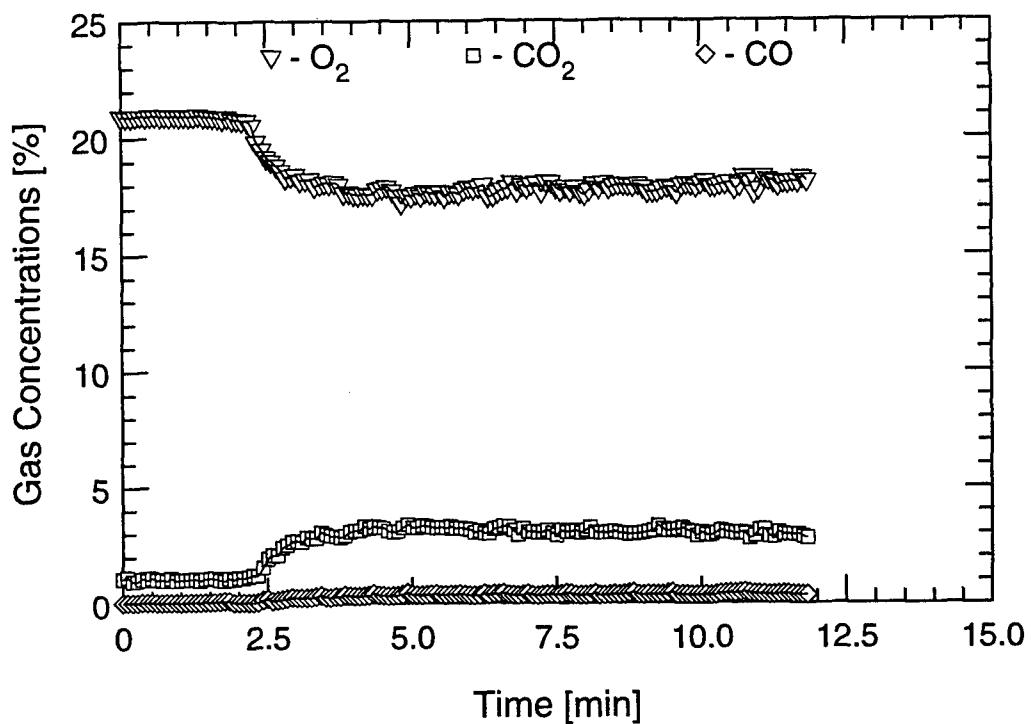
Aft Tree



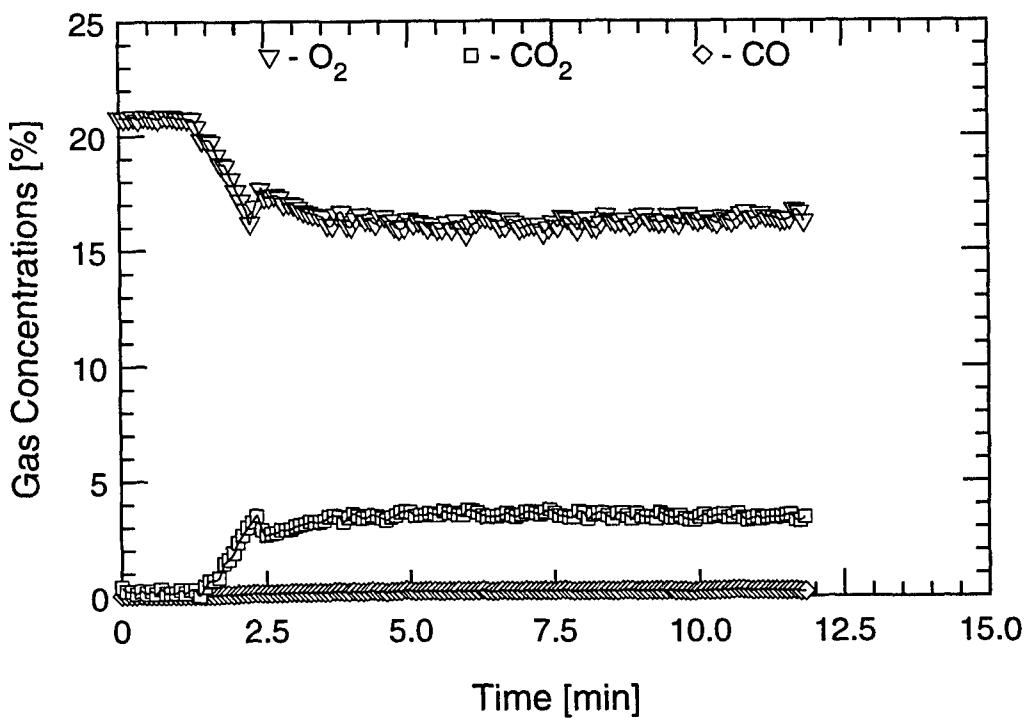
Forward Tree

TEST #33

B-196

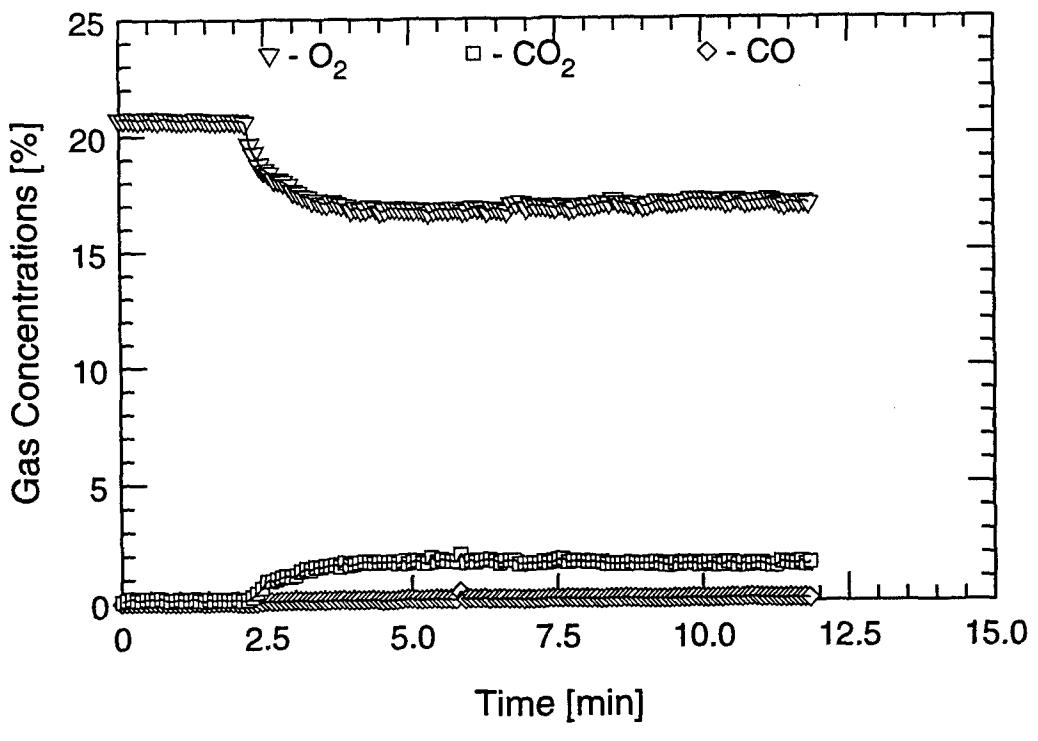


Aft Tree (Low)

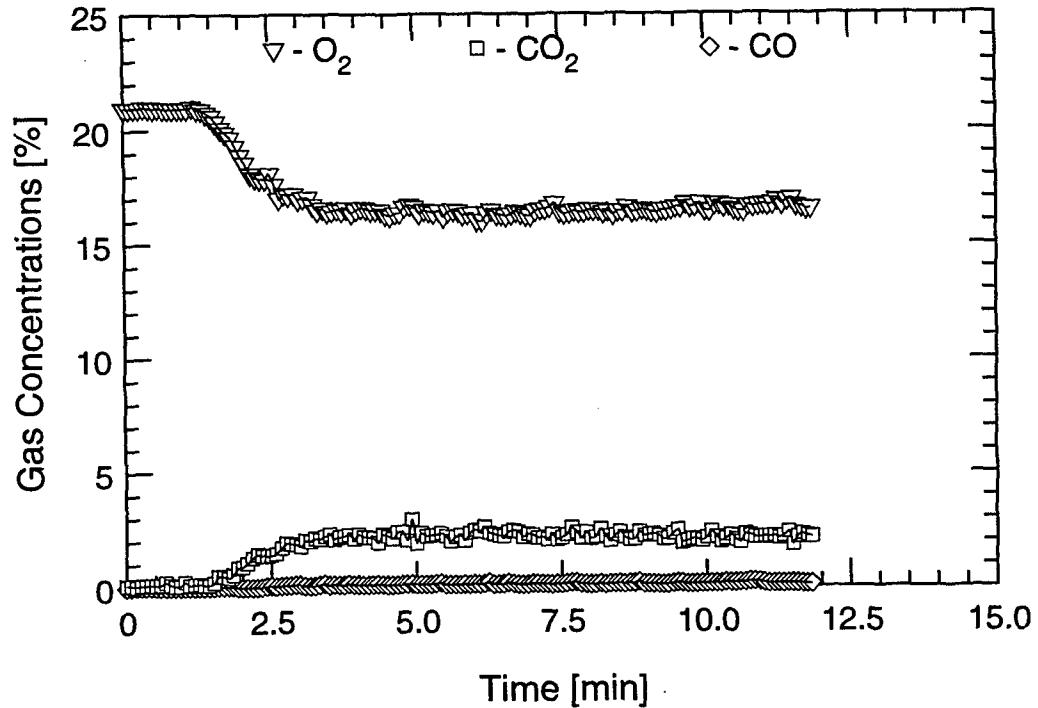


Aft Tree (High)

TEST #33



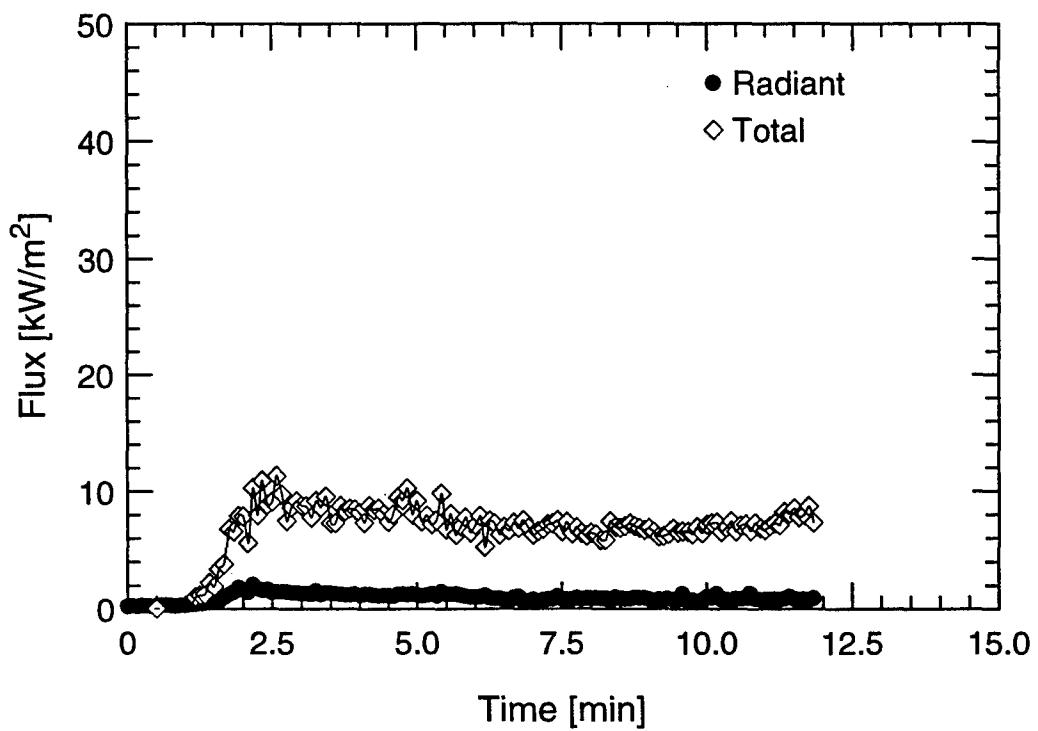
Forward Tree (Low)



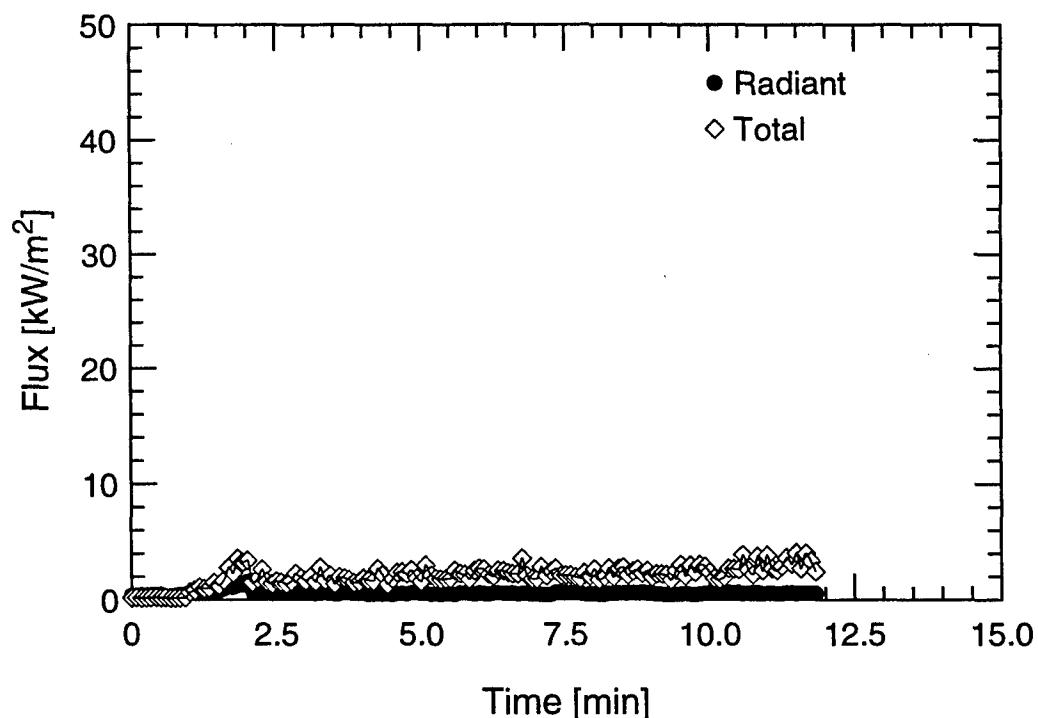
Forward Tree (High)

TEST #33

B-198



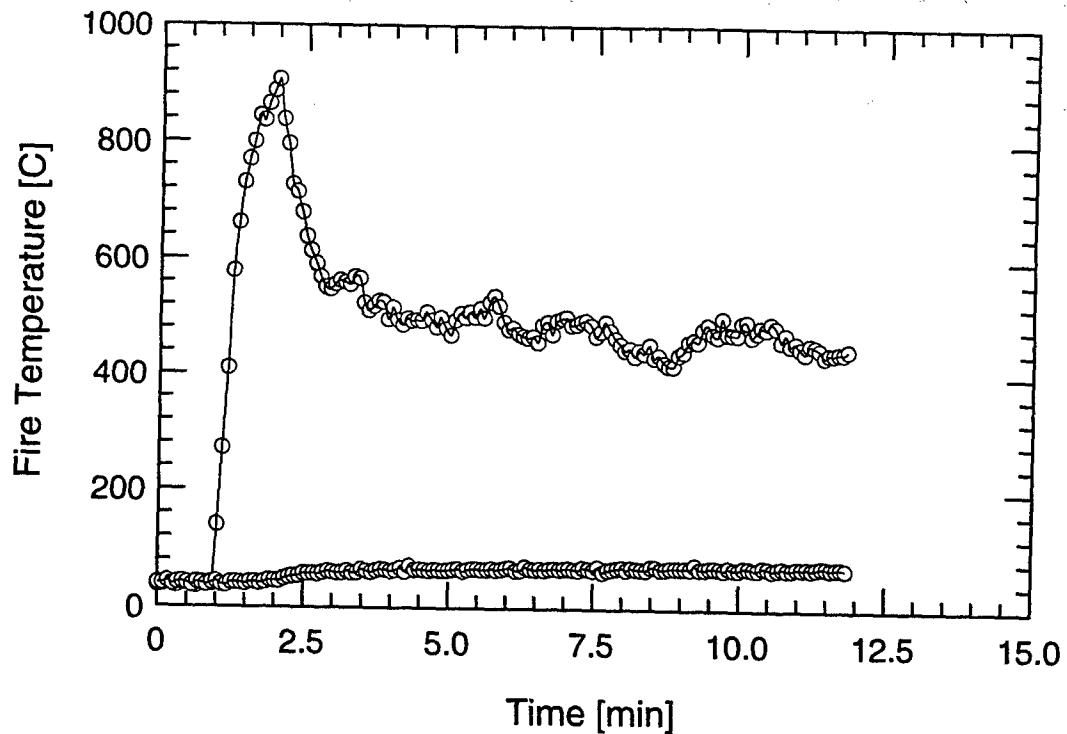
Overhead



Forward Bulkhead

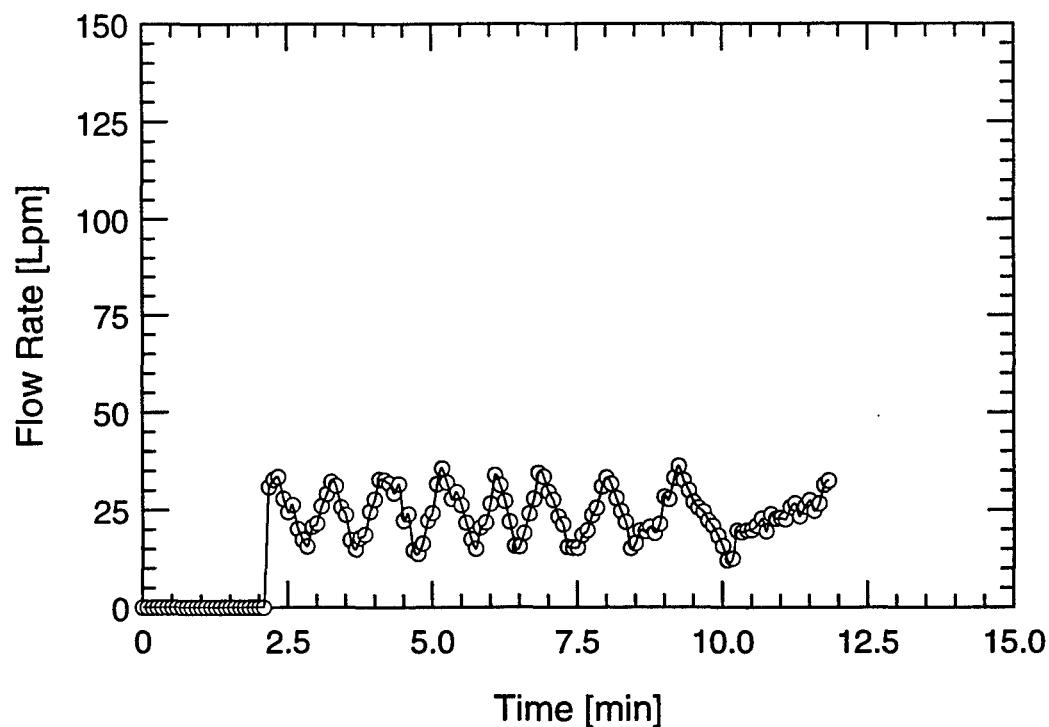
TEST #33

B-199

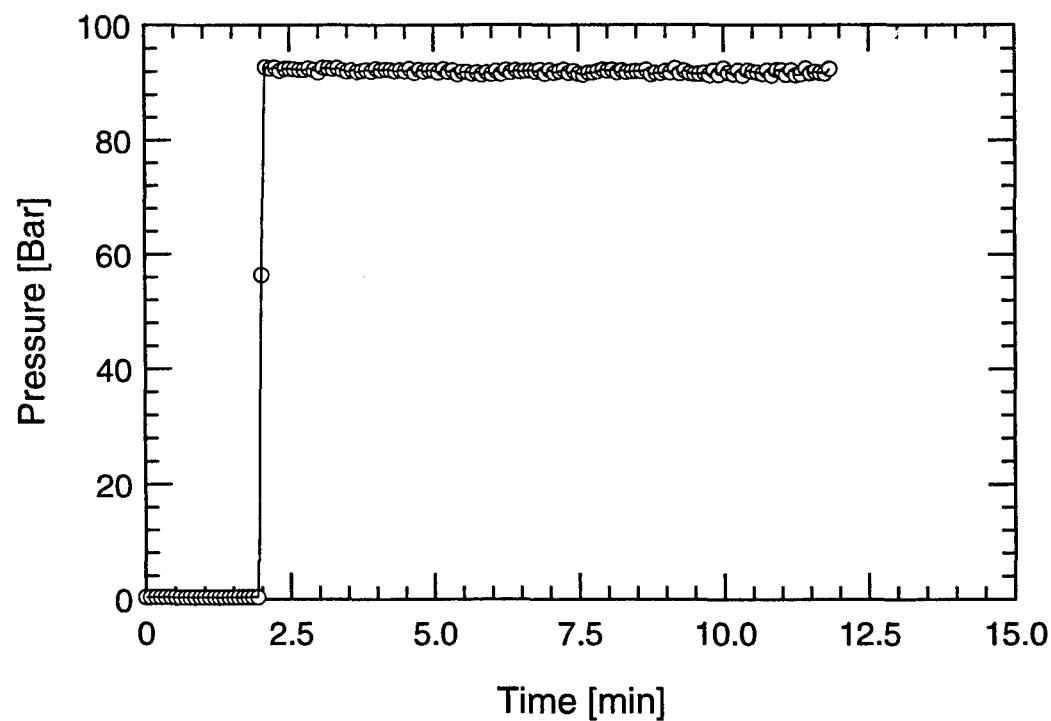


TEST #33

B-200



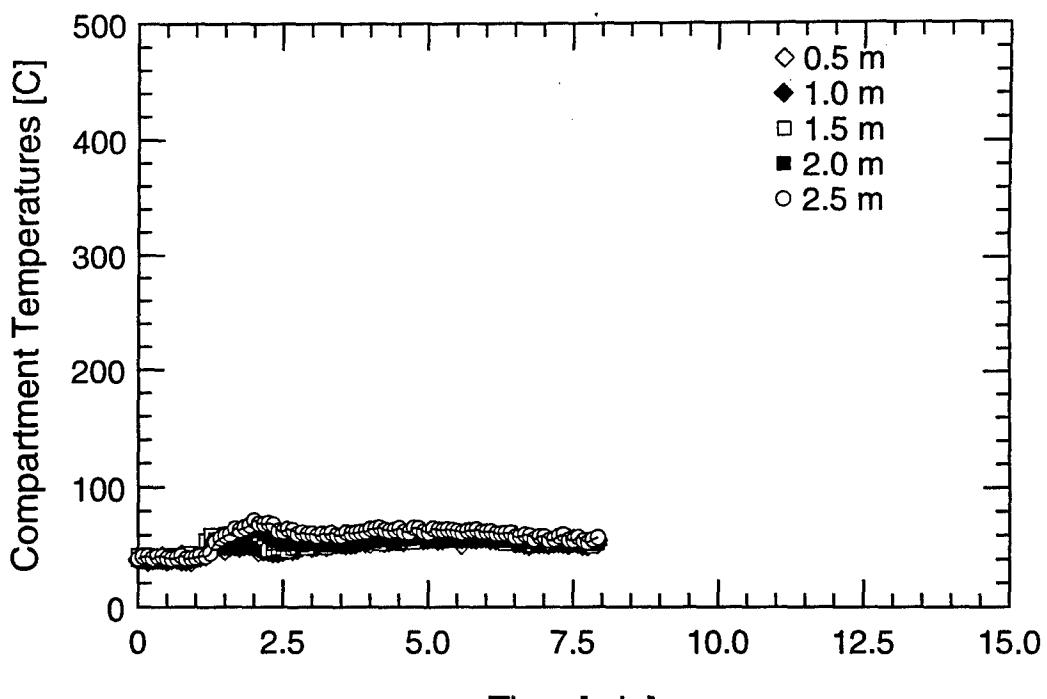
Water Mist System Flow Rate



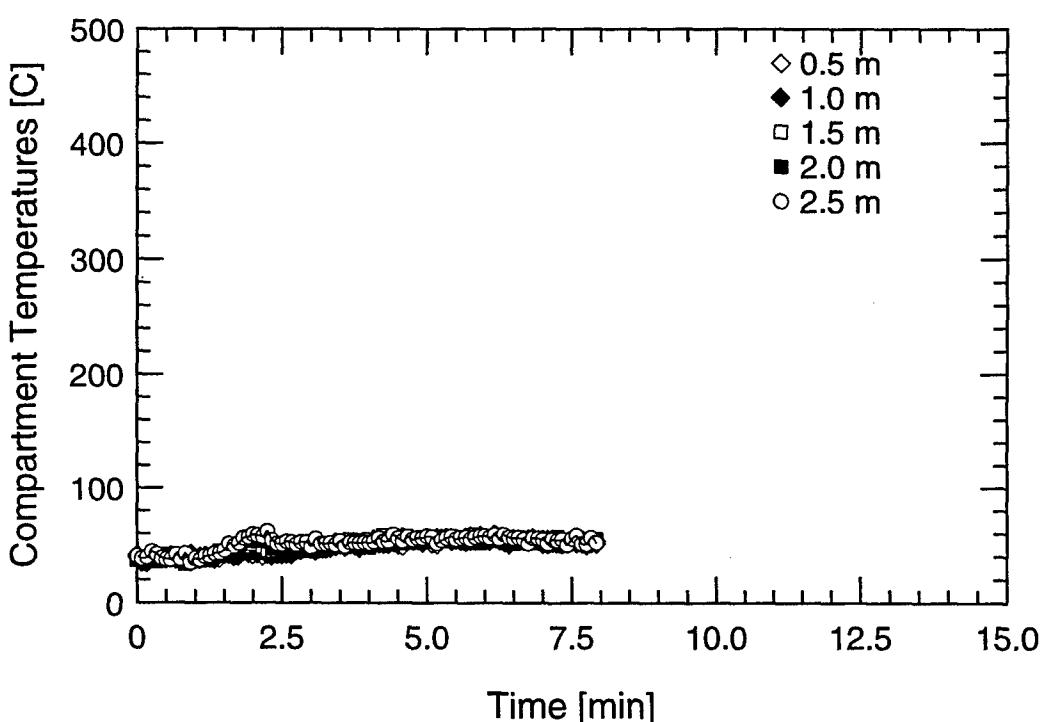
Water Mist System Pressure

TEST #33

B-201



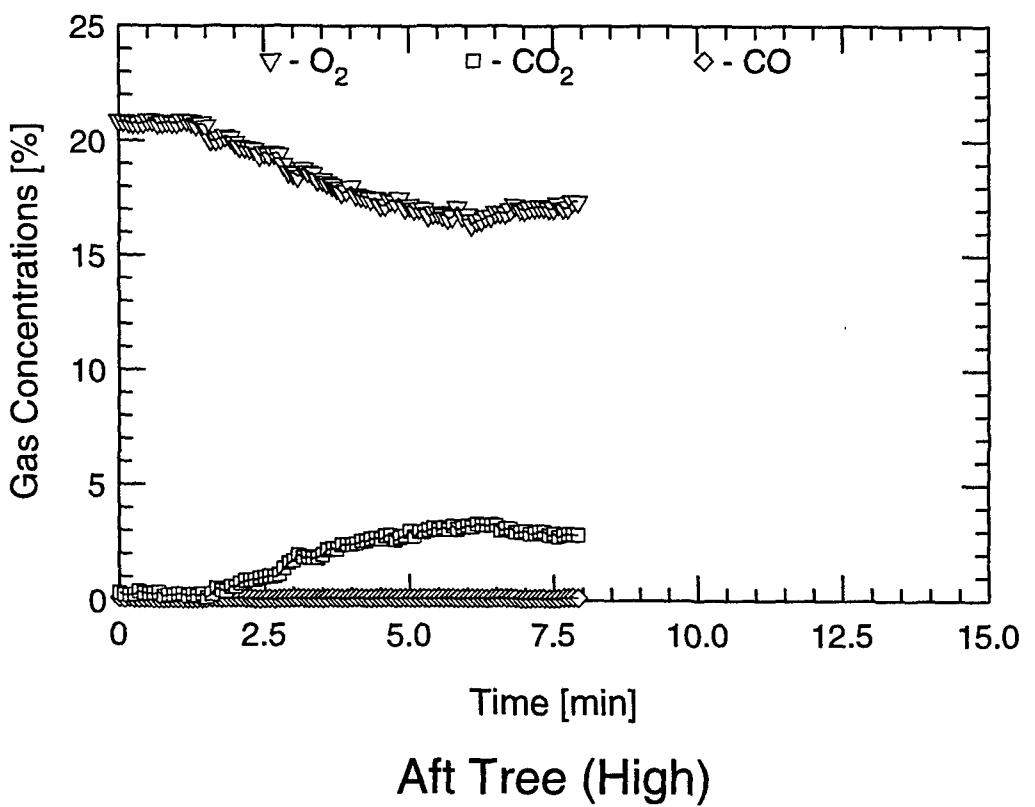
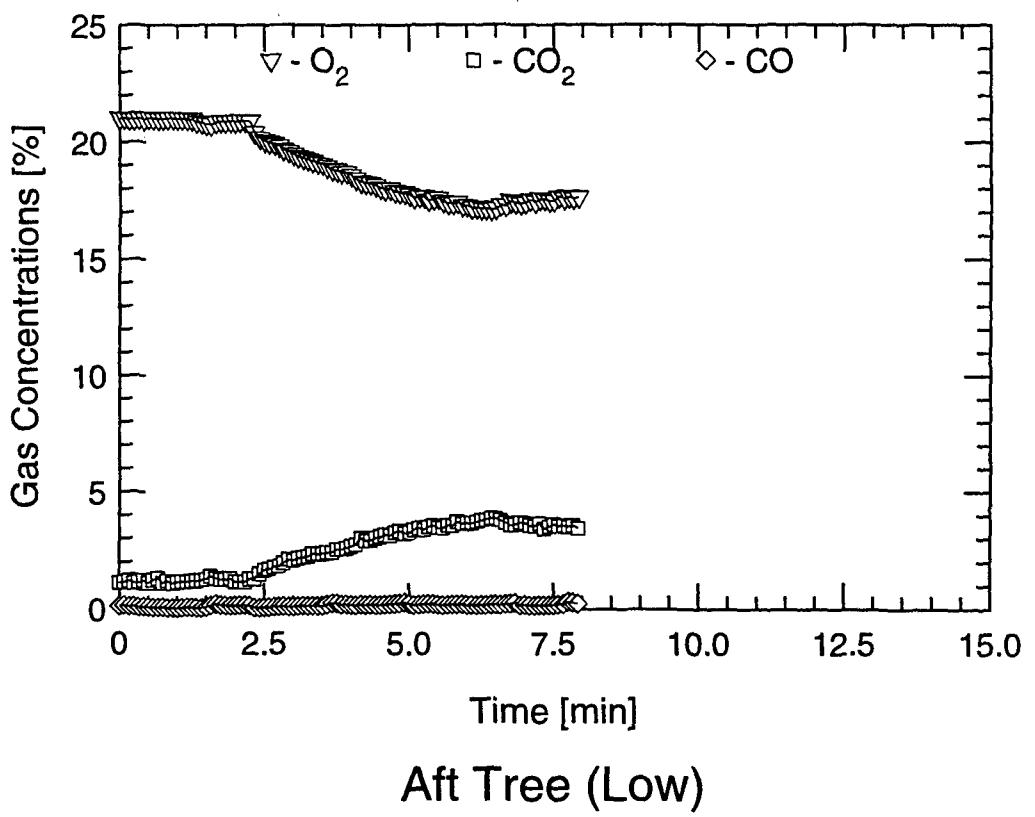
Aft Tree



Forward Tree

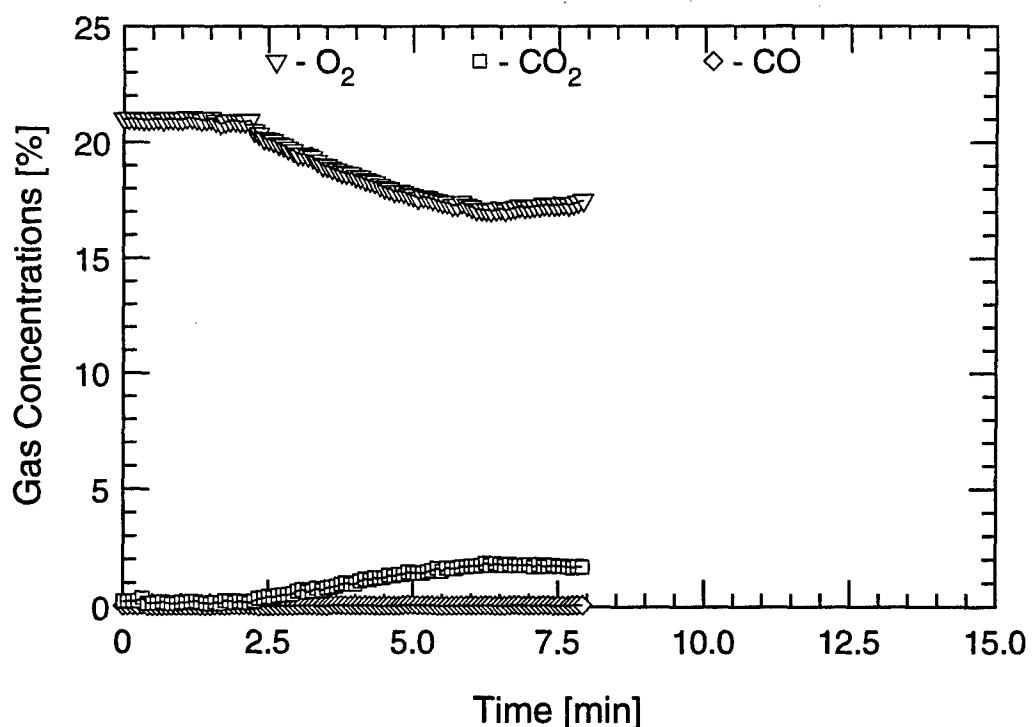
TEST #34

B-202

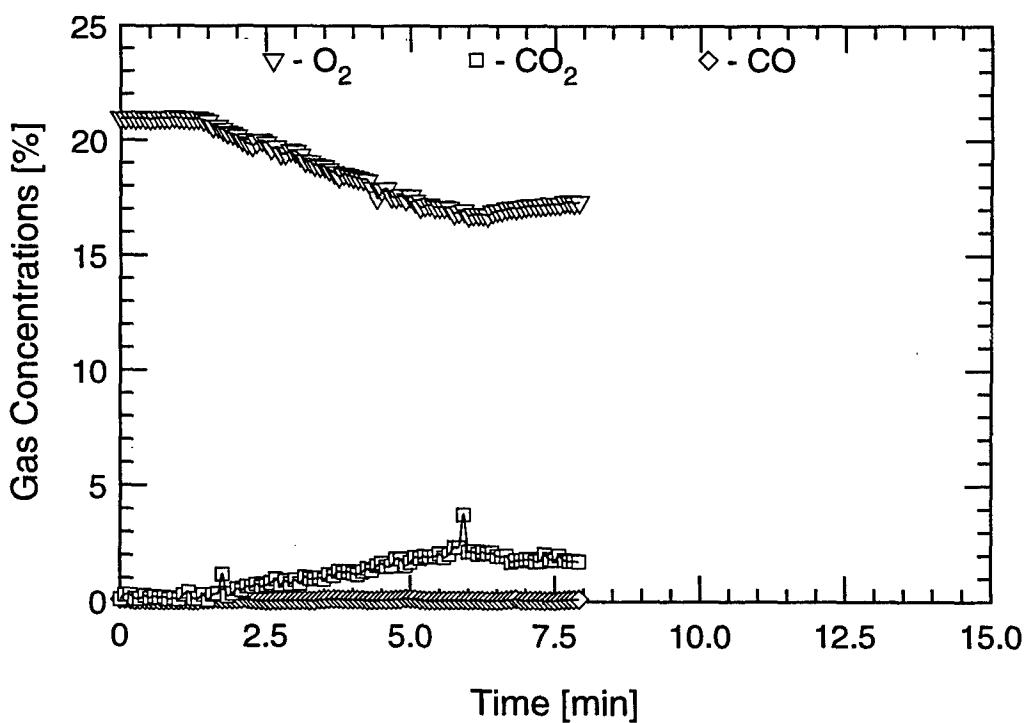


TEST #34

B-203



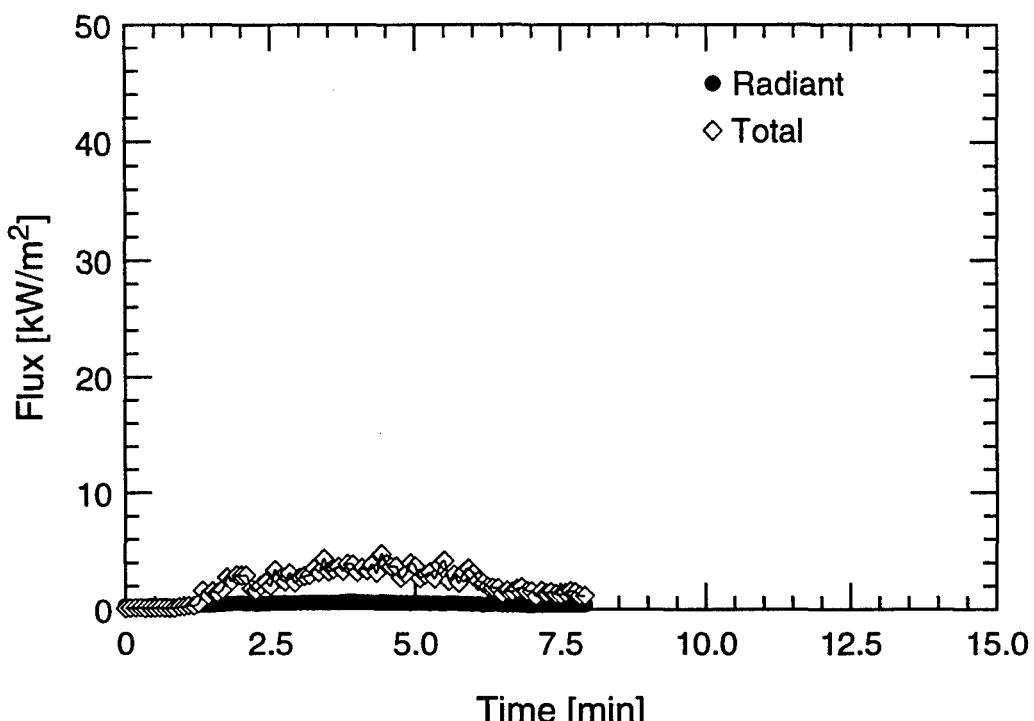
Forward Tree (Low)



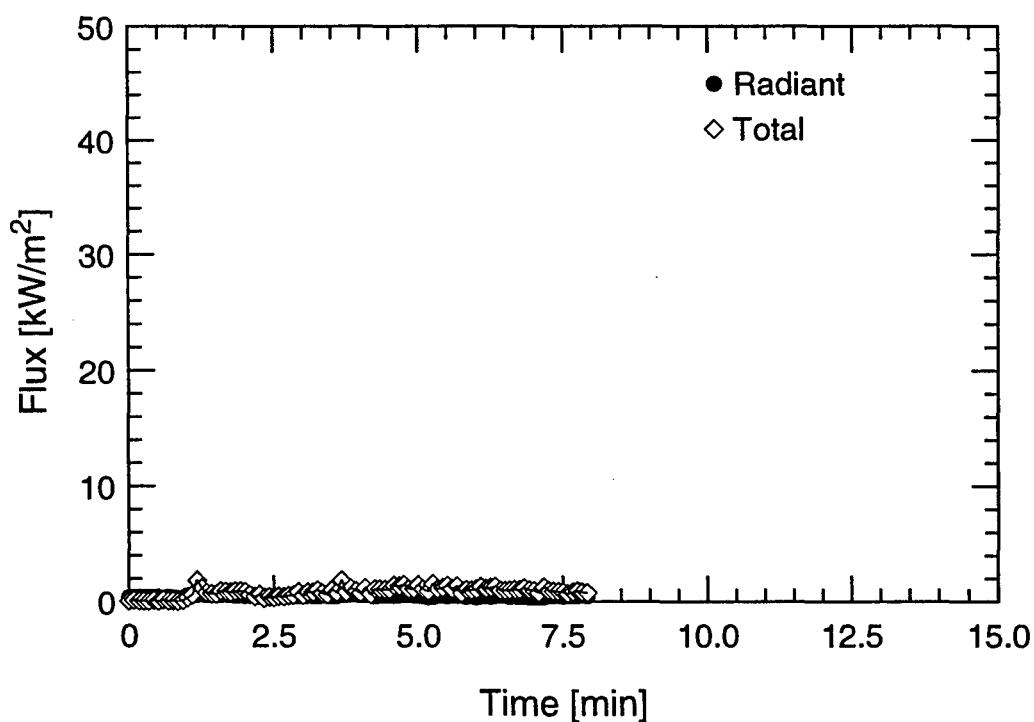
Forward Tree (High)

TEST #34

B-204



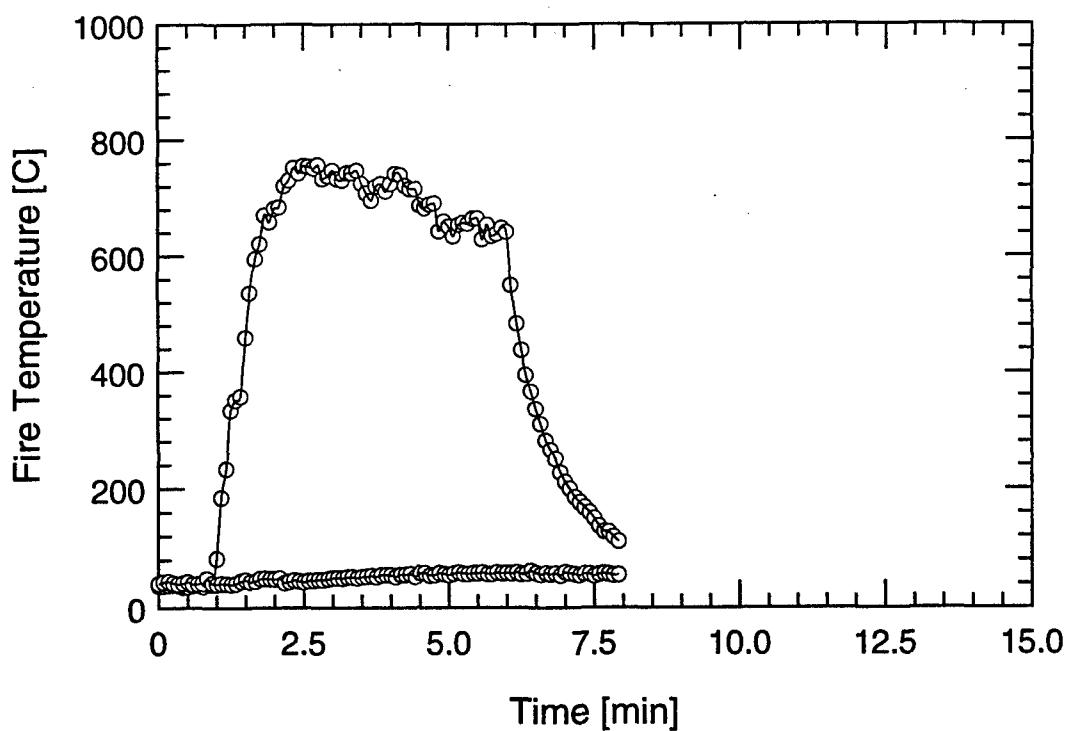
Overhead



Forward Bulkhead

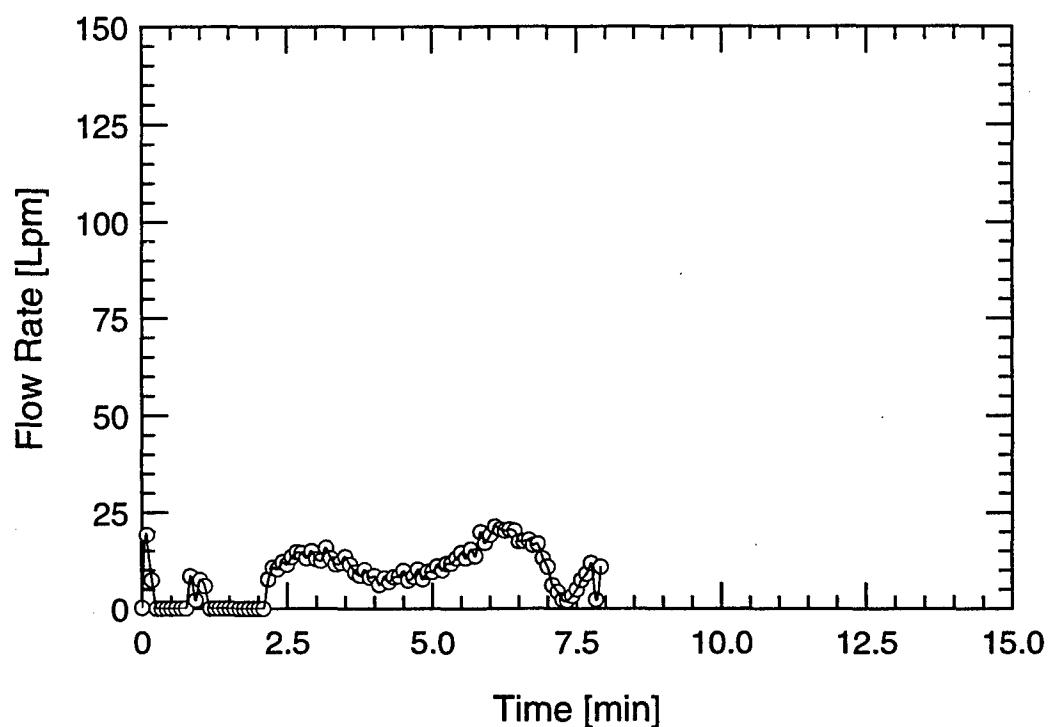
TEST #34

B-205

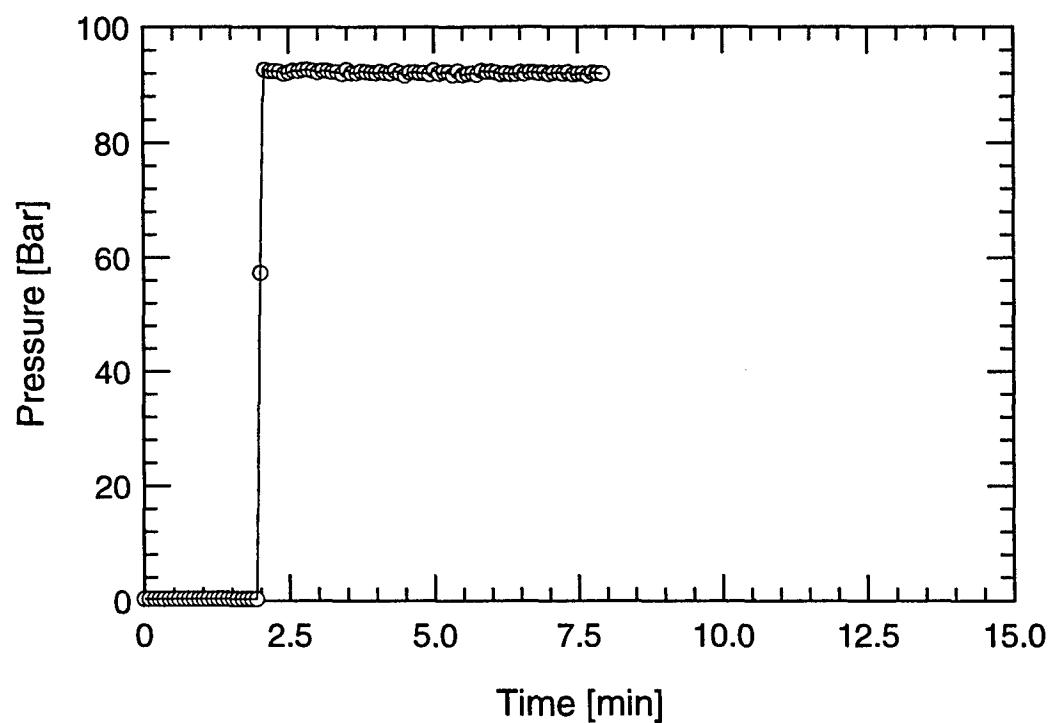


TEST #34

B-206



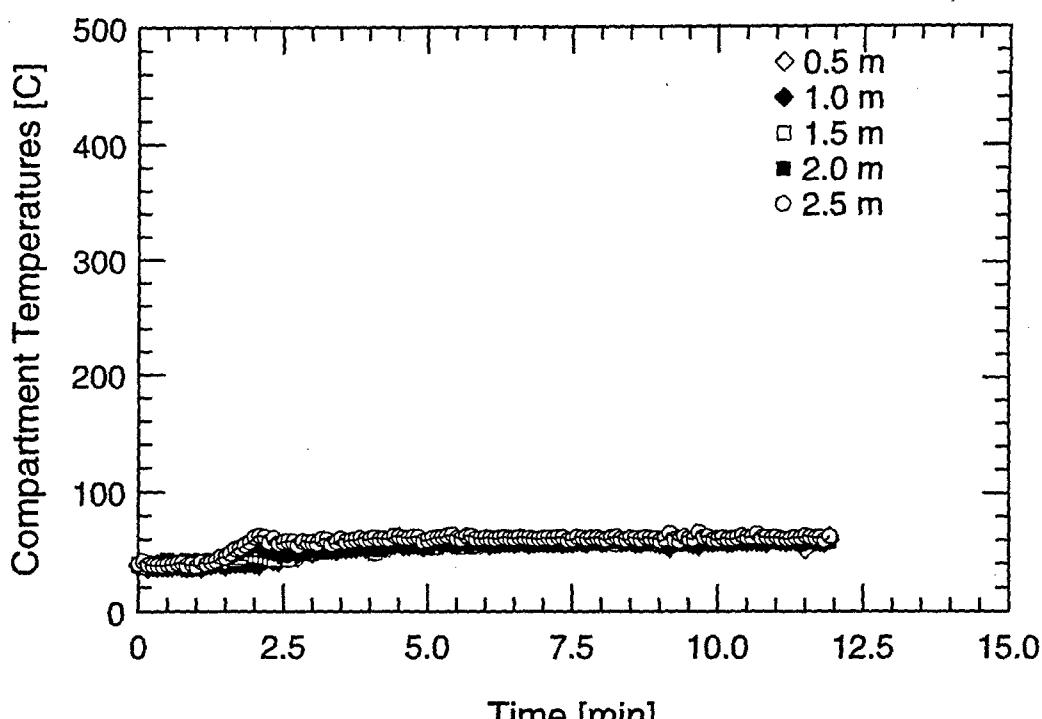
Water Mist System Flow Rate



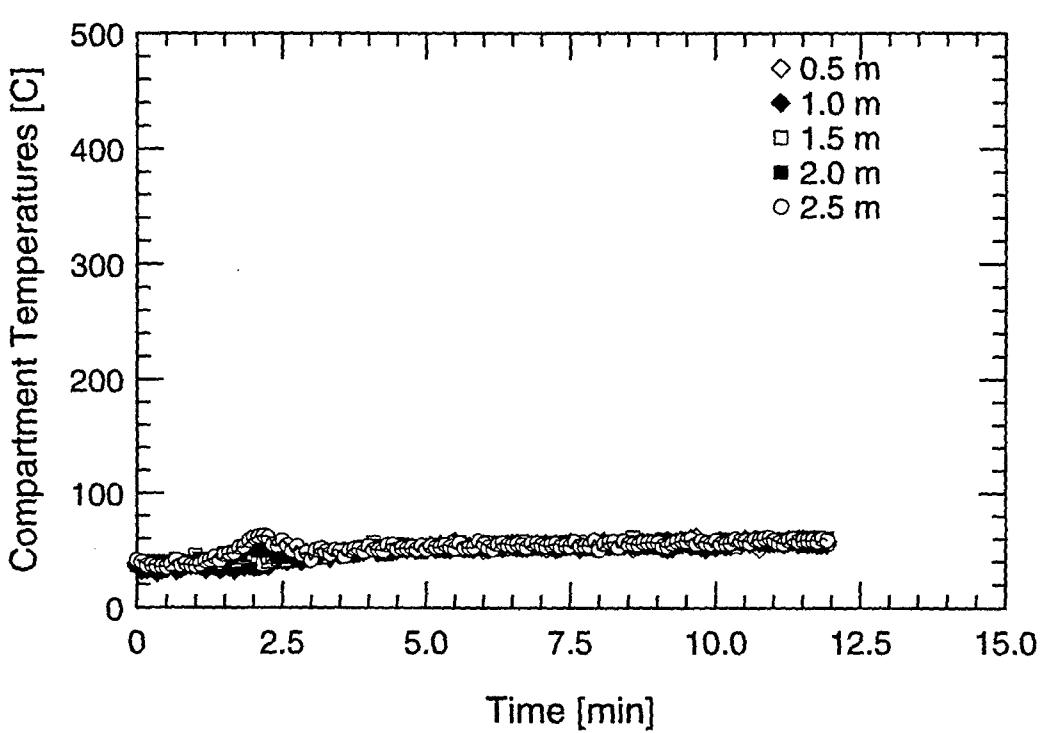
Water Mist System Pressure

TEST #34

B-207



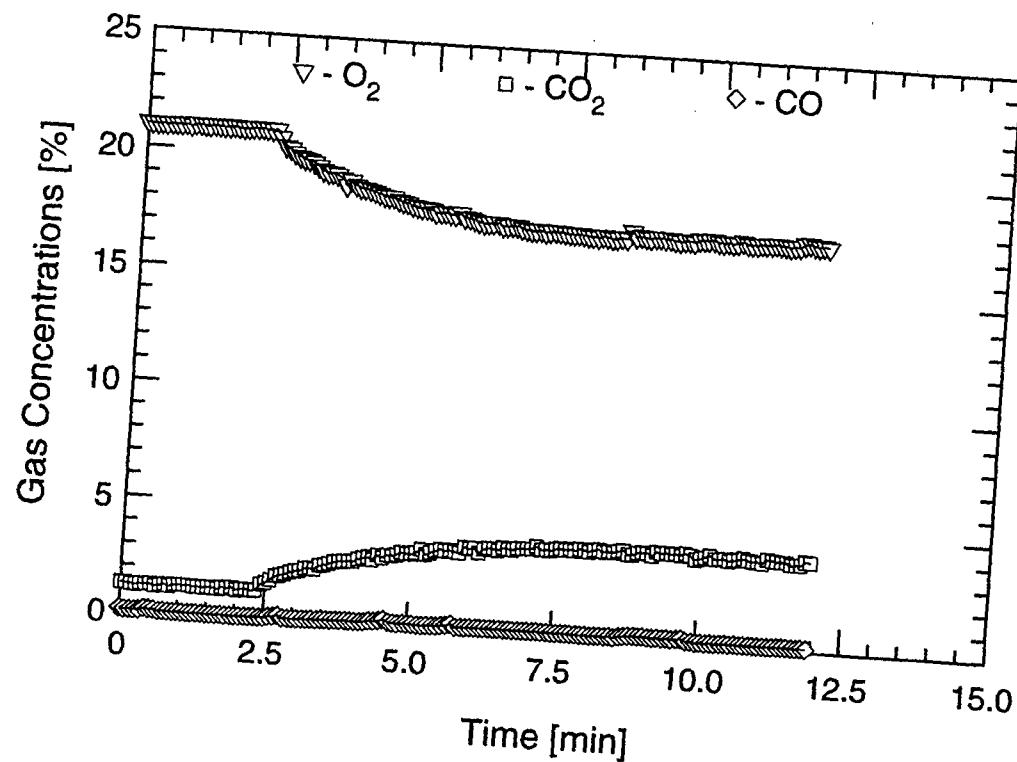
Aft Tree



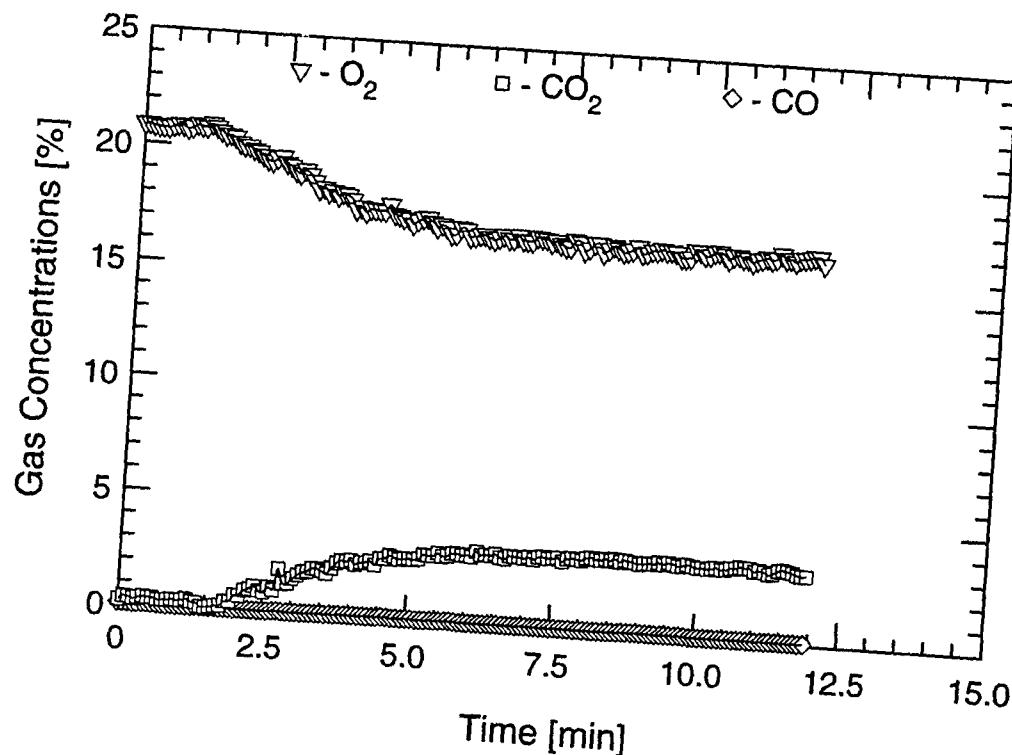
Forward Tree

TEST #35

B-208



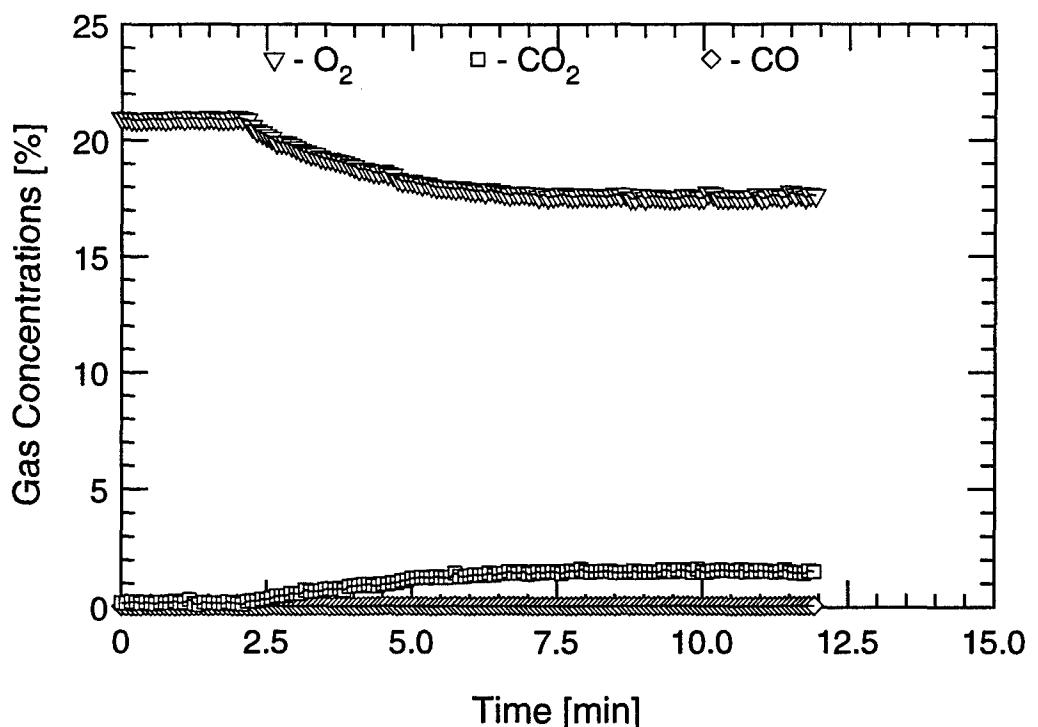
Aft Tree (Low)



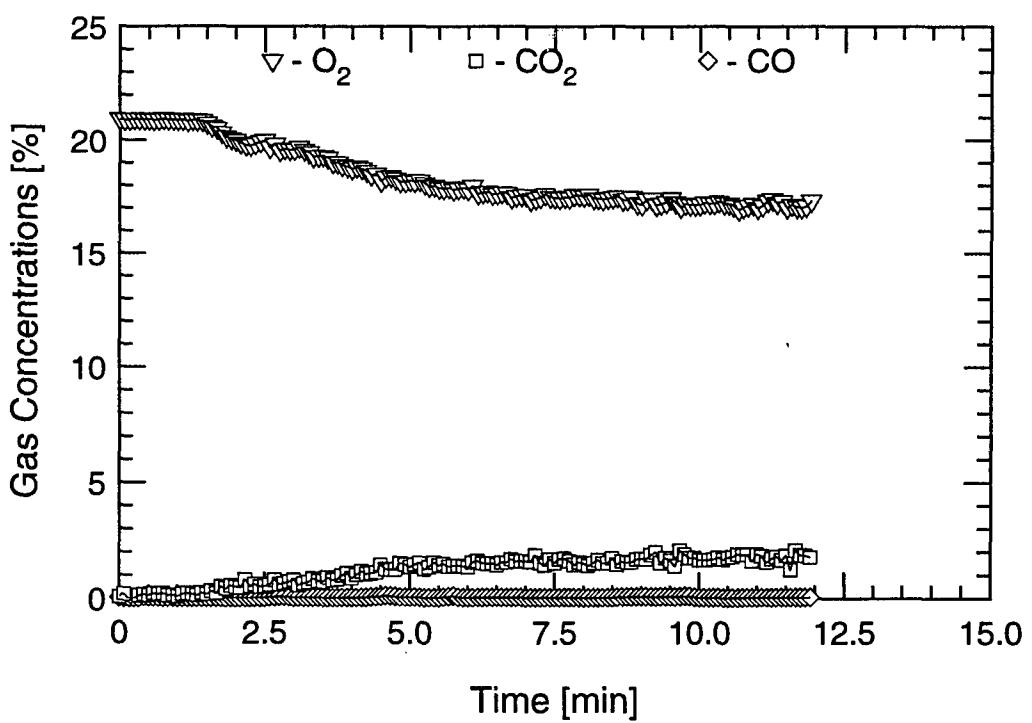
Aft Tree (High)

TEST #35

B-209



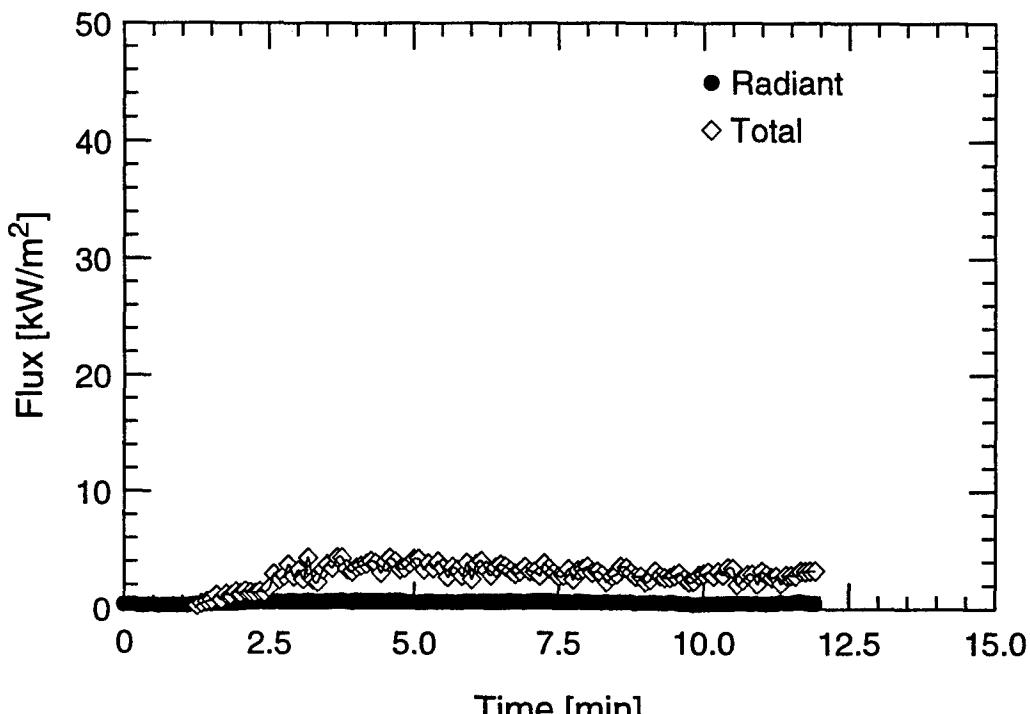
Forward Tree (Low)



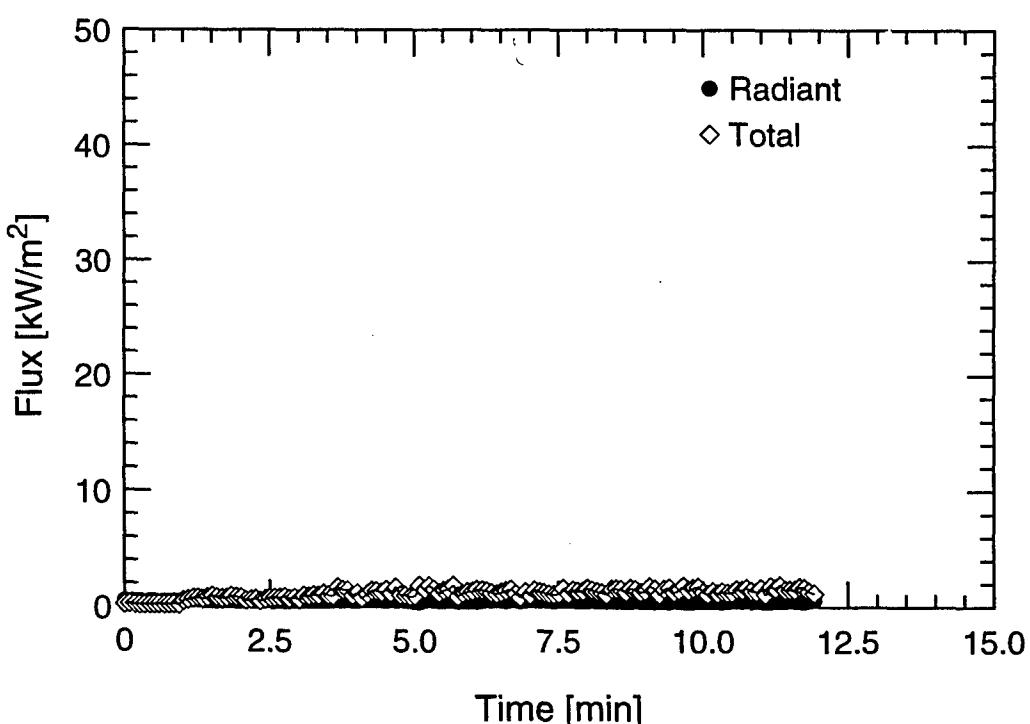
Forward Tree (High)

TEST #35

B-210



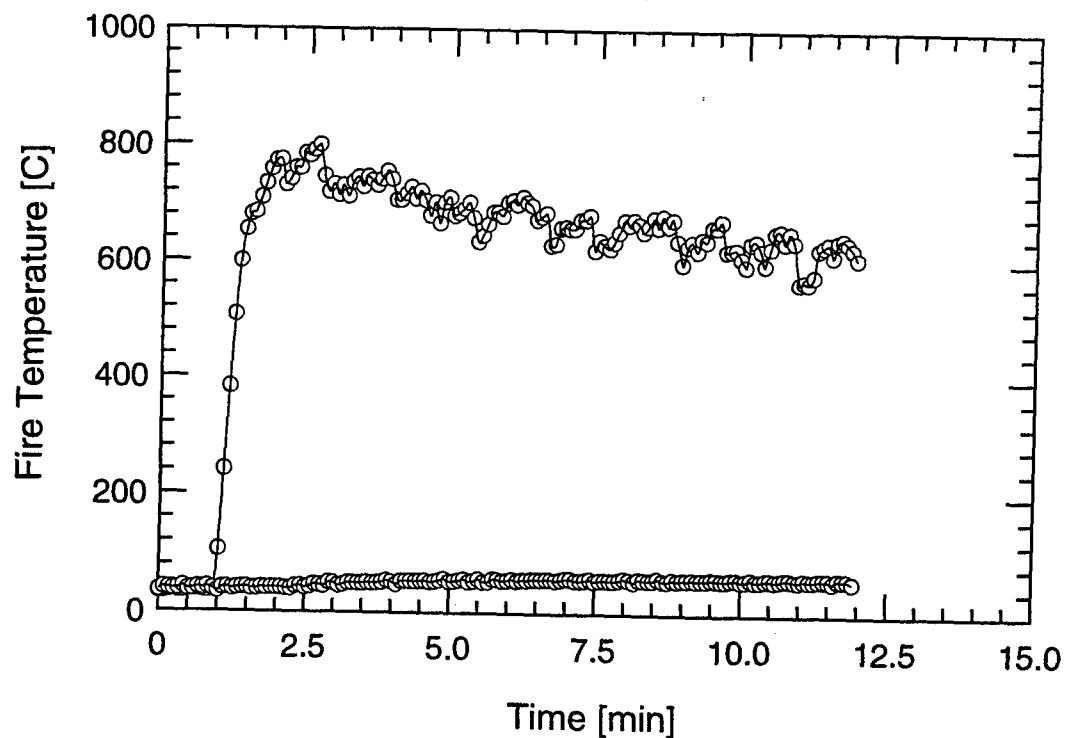
Overhead



Forward Bulkhead

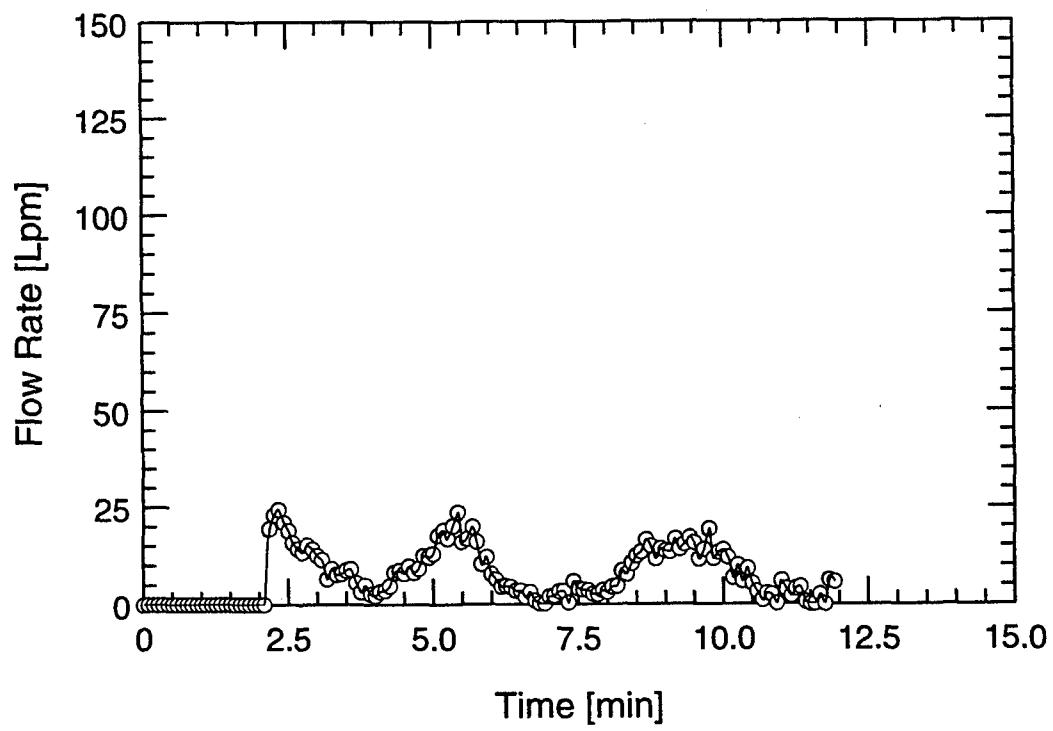
TEST #35

B-211

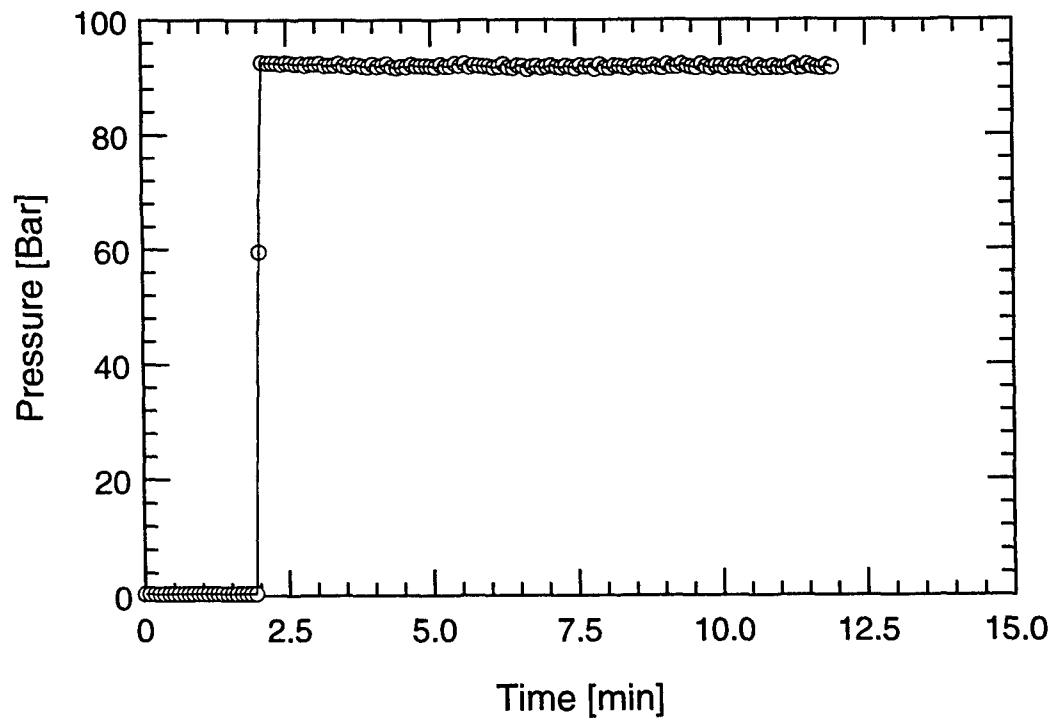


TEST #35

B-212



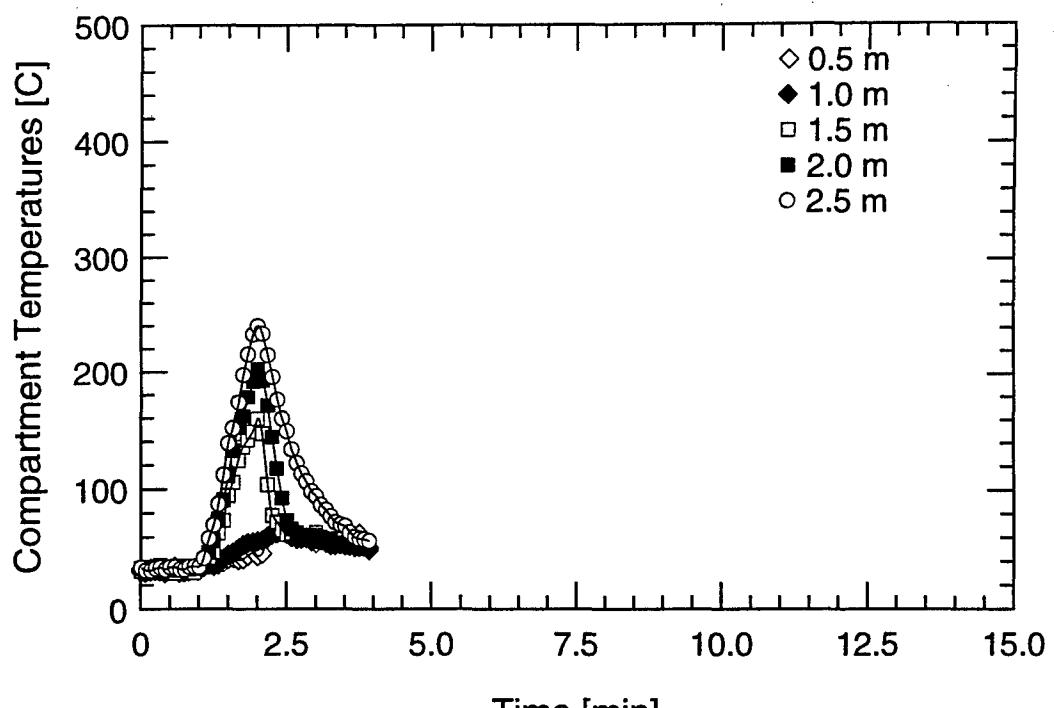
Water Mist System Flow Rate



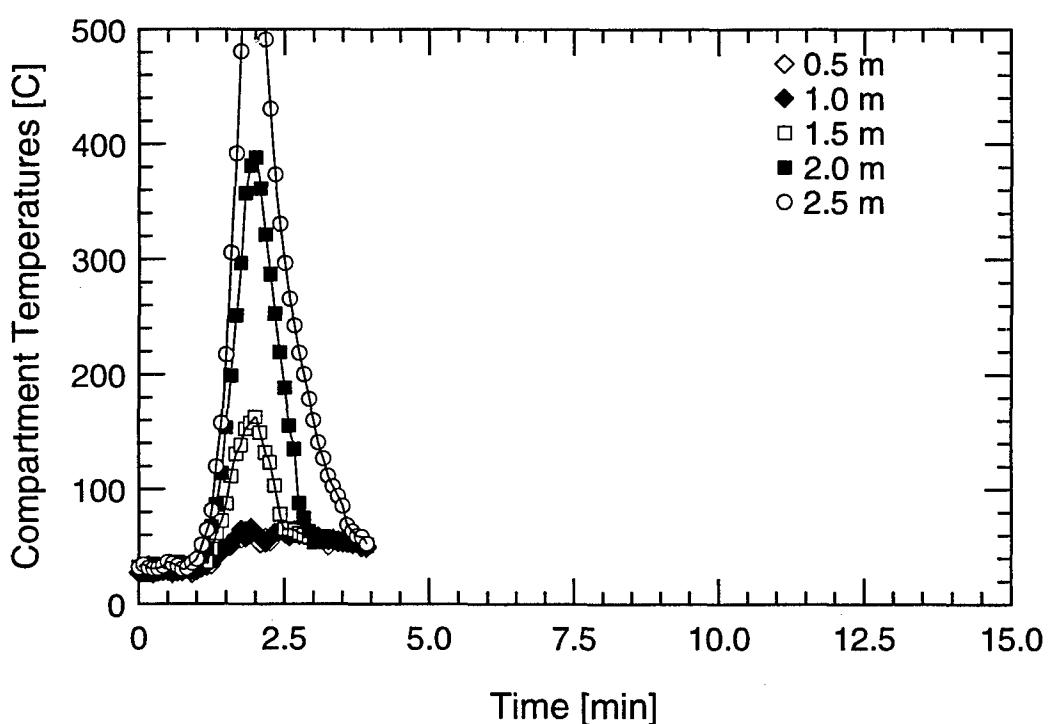
Water Mist System Pressure

TEST #35

B-213



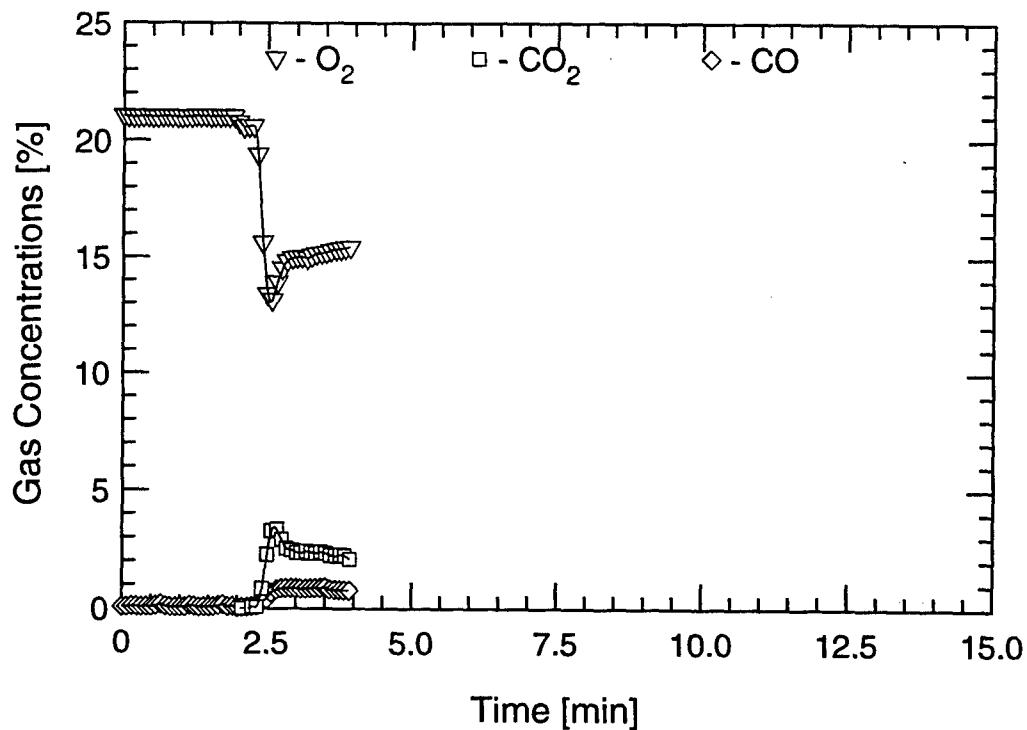
Aft Tree



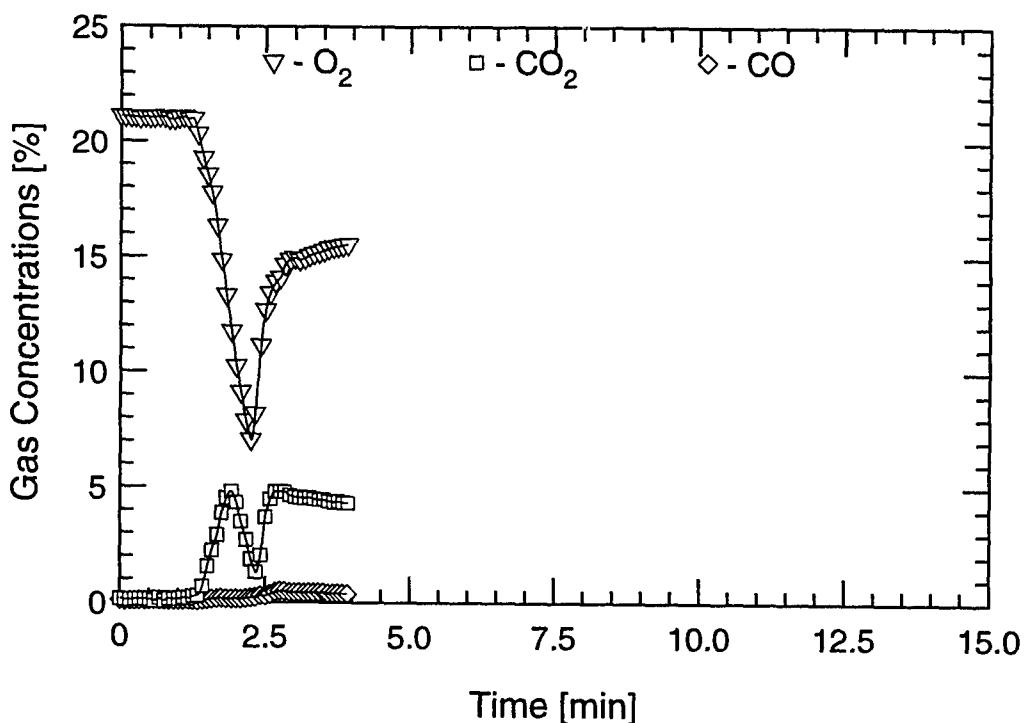
Forward Tree

TEST #36

B-214



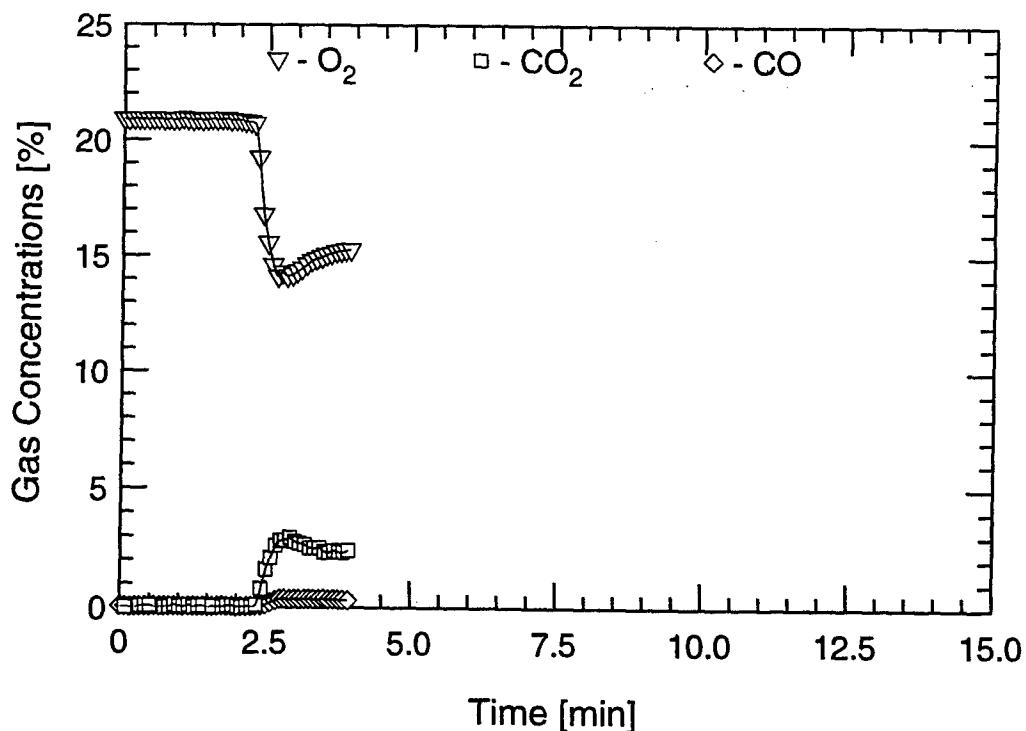
Aft Tree (Low)



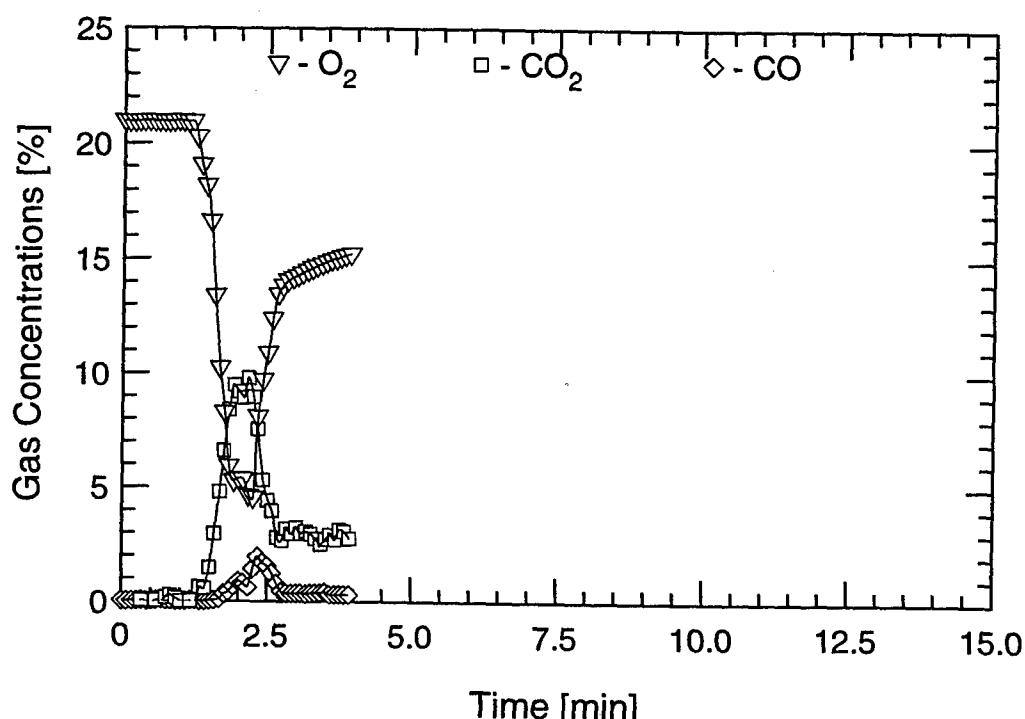
Aft Tree (High)

TEST #36

B-215



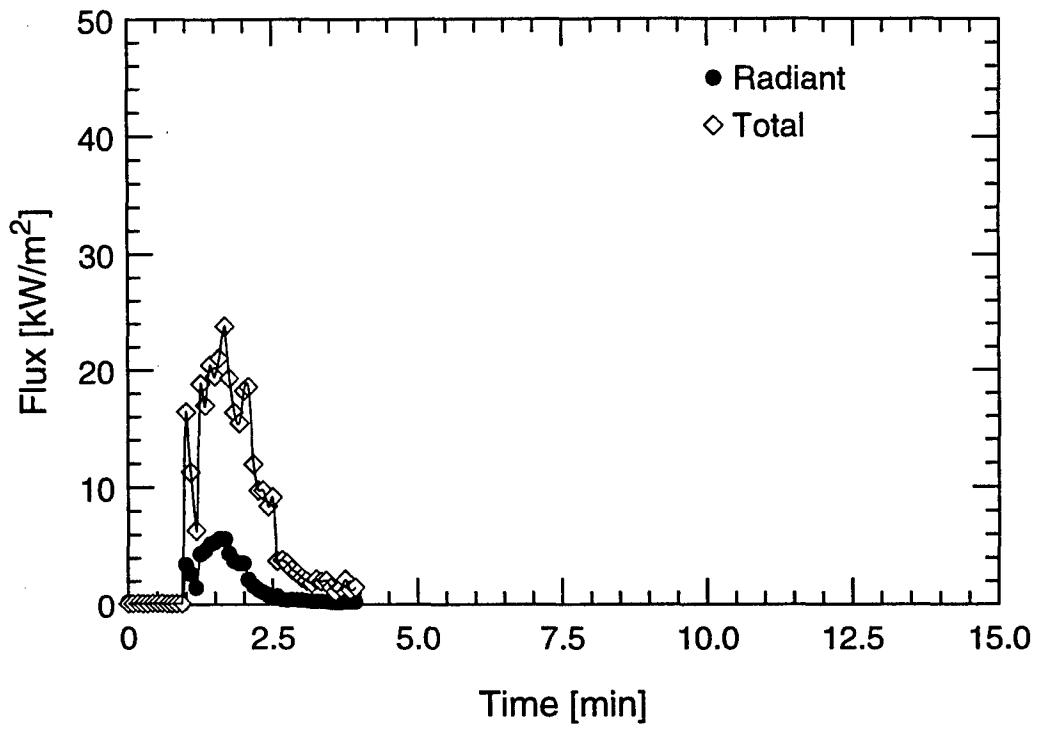
Forward Tree (Low)



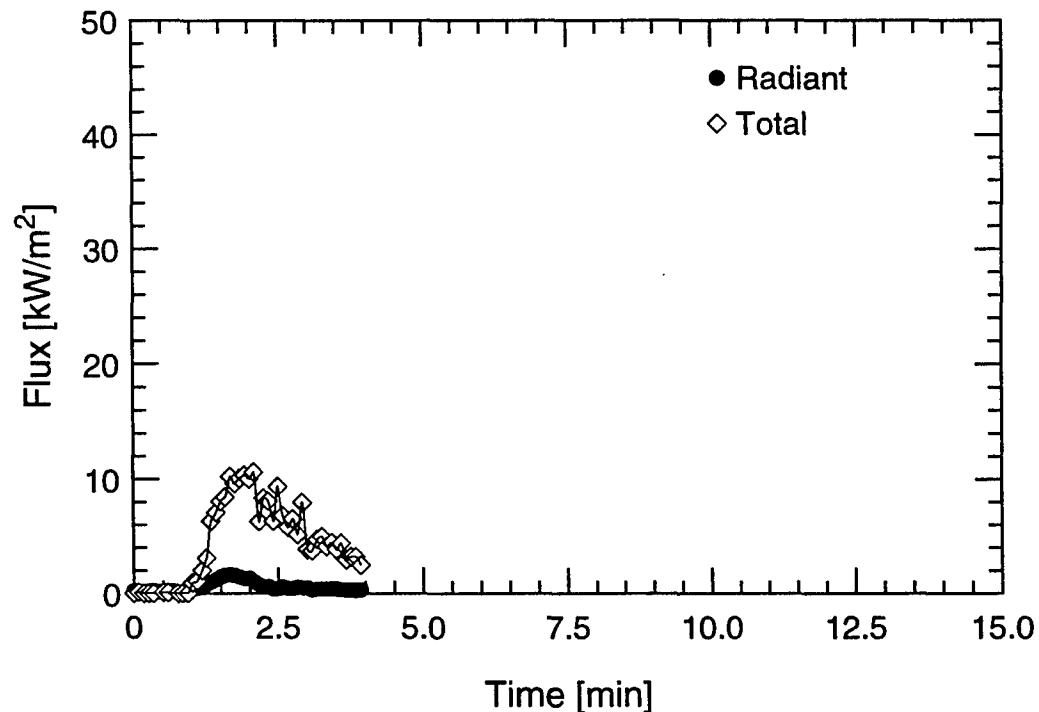
Forward Tree (High)

TEST #36

B-216

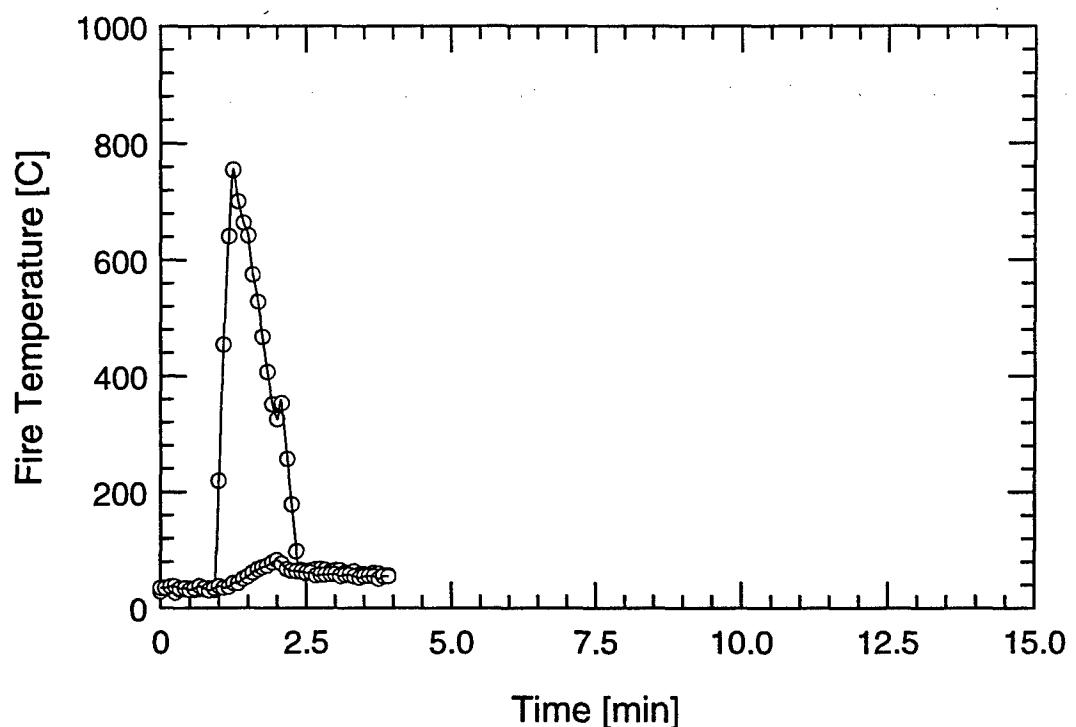


Overhead



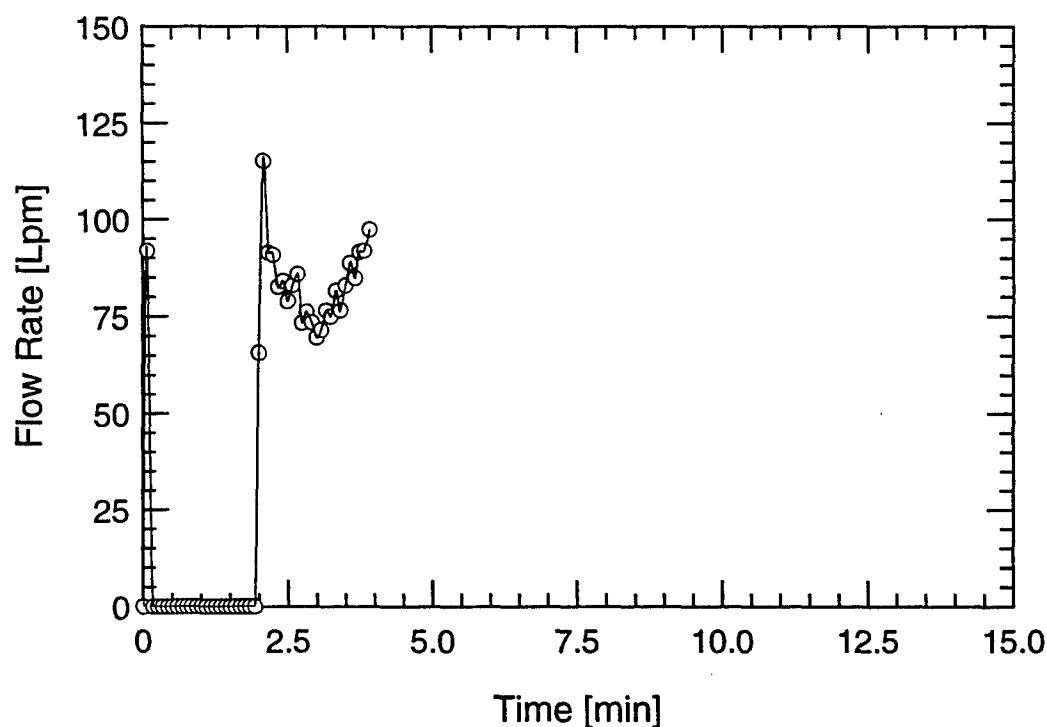
Forward Bulkhead

TEST #36

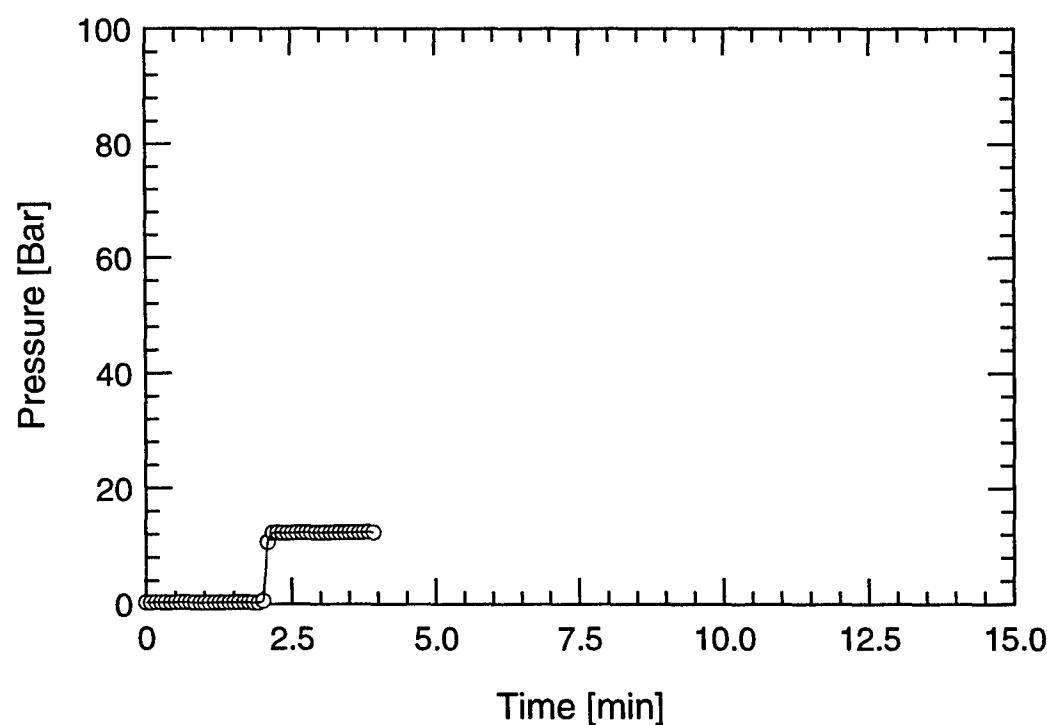


TEST #36

B-218



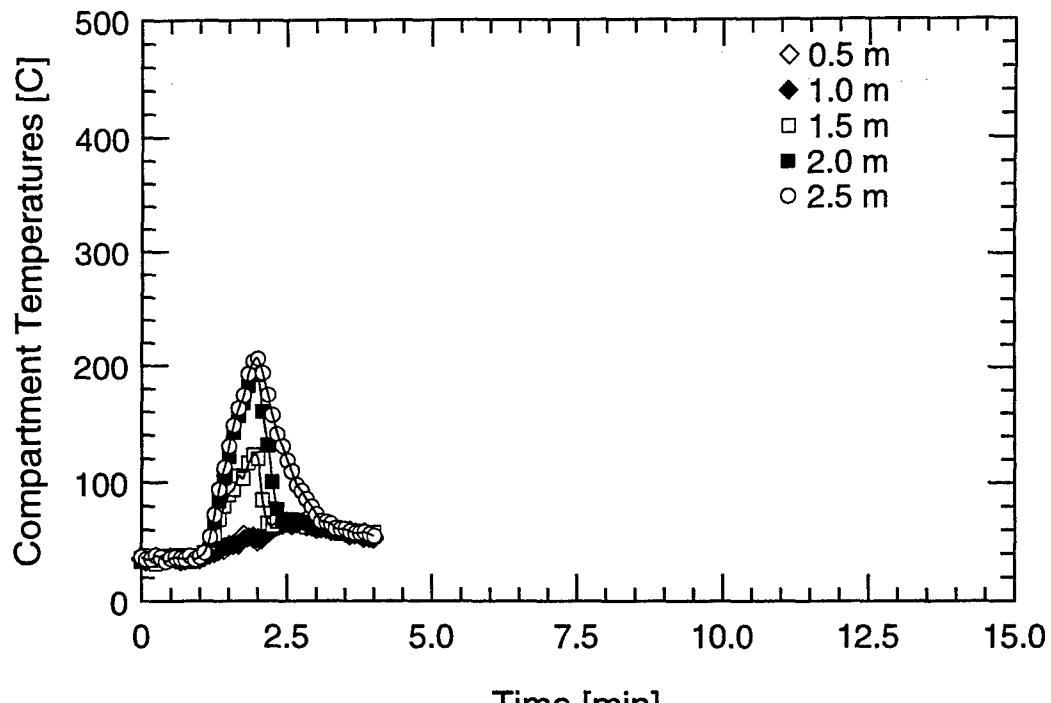
Water Mist System Flow Rate



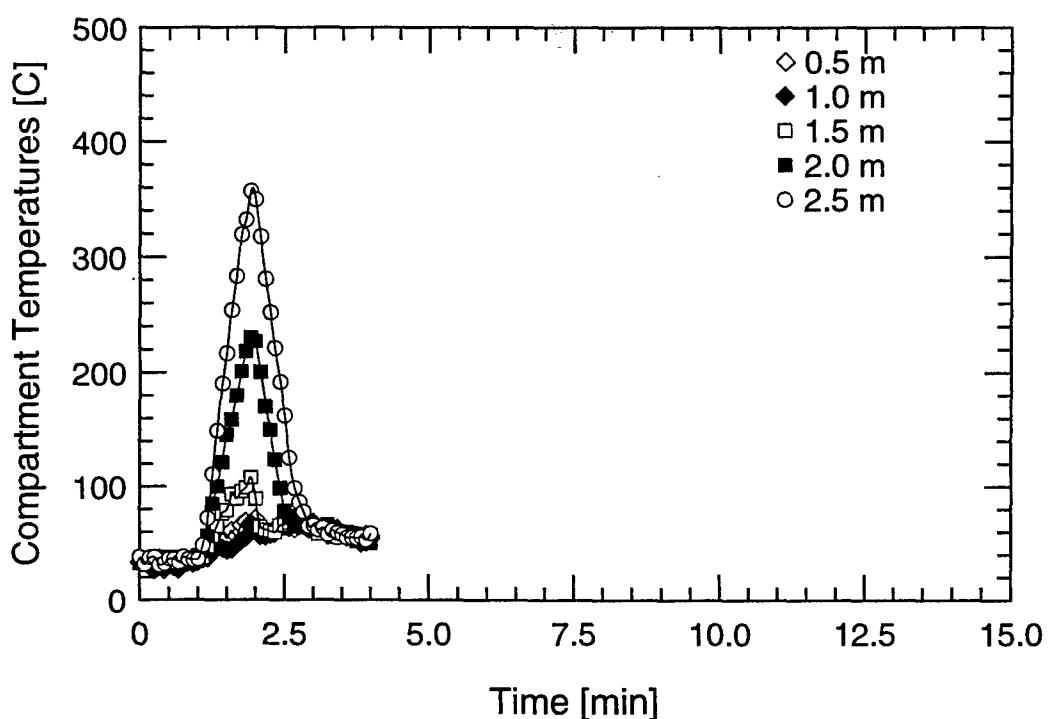
Water Mist System Pressure

TEST #36

B-219



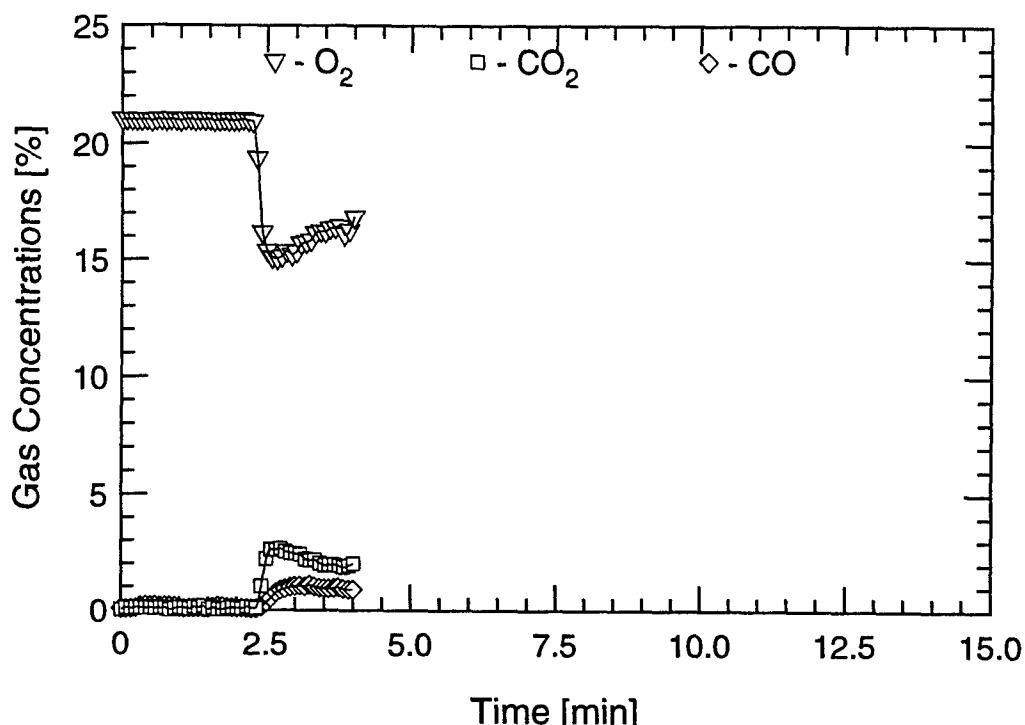
Aft Tree



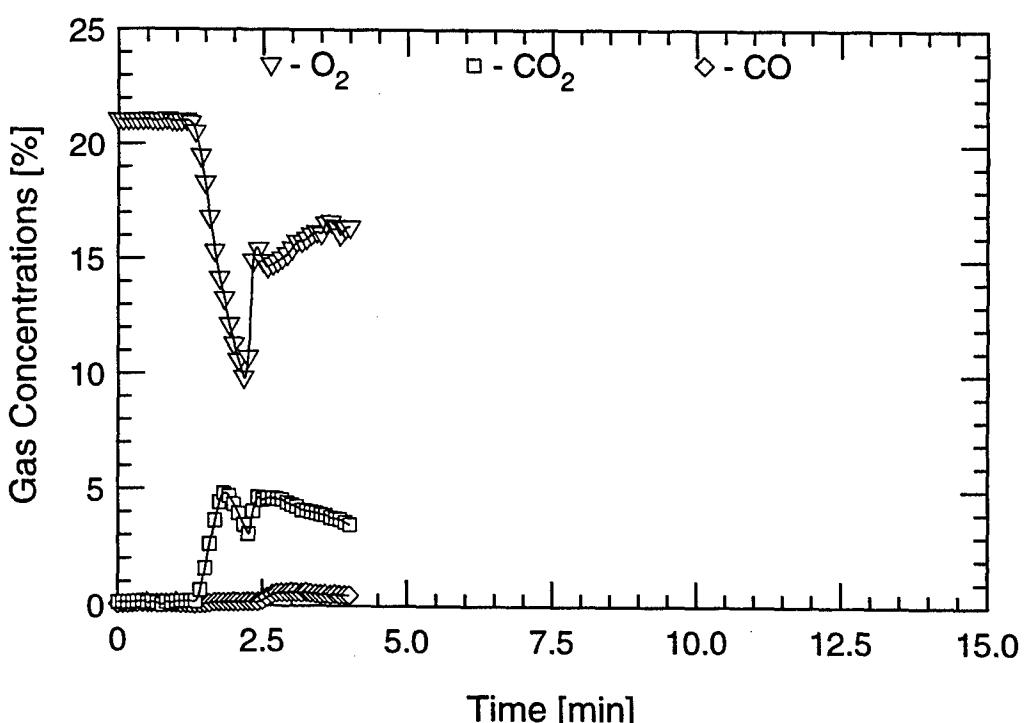
Forward Tree

TEST #37

B-220



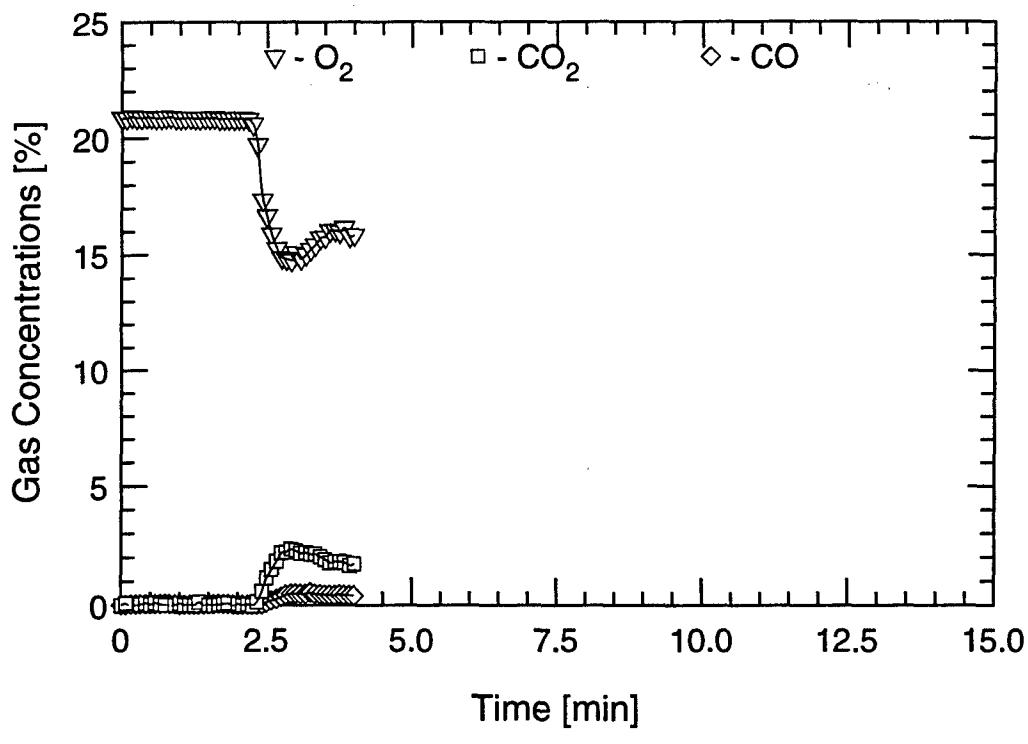
Aft Tree (Low)



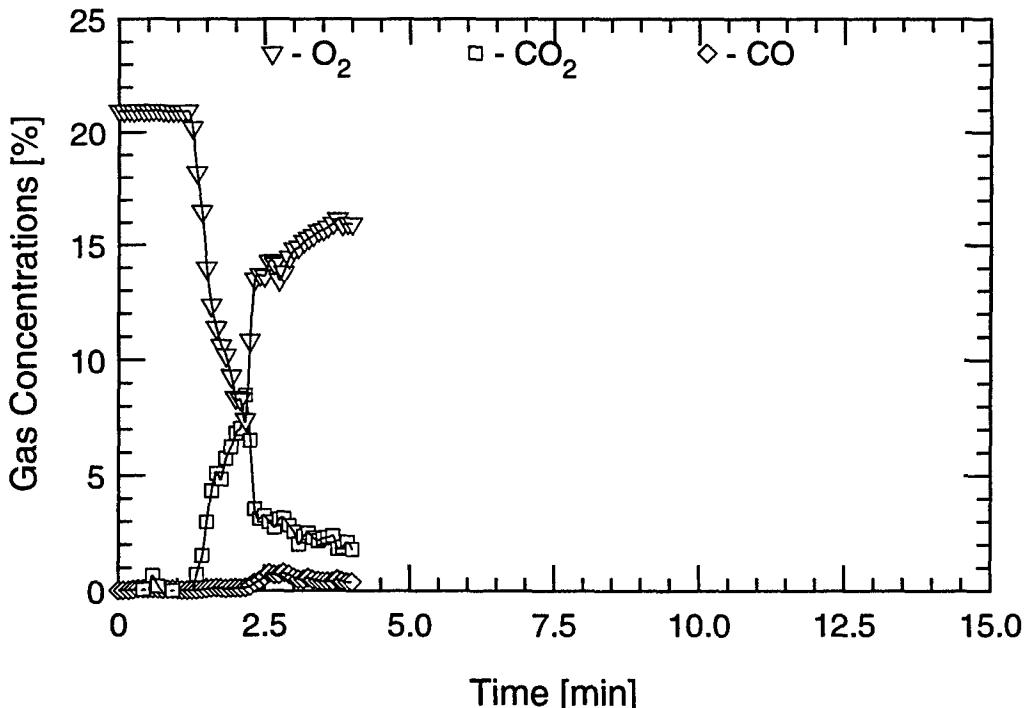
Aft Tree (High)

TEST #37

B-221



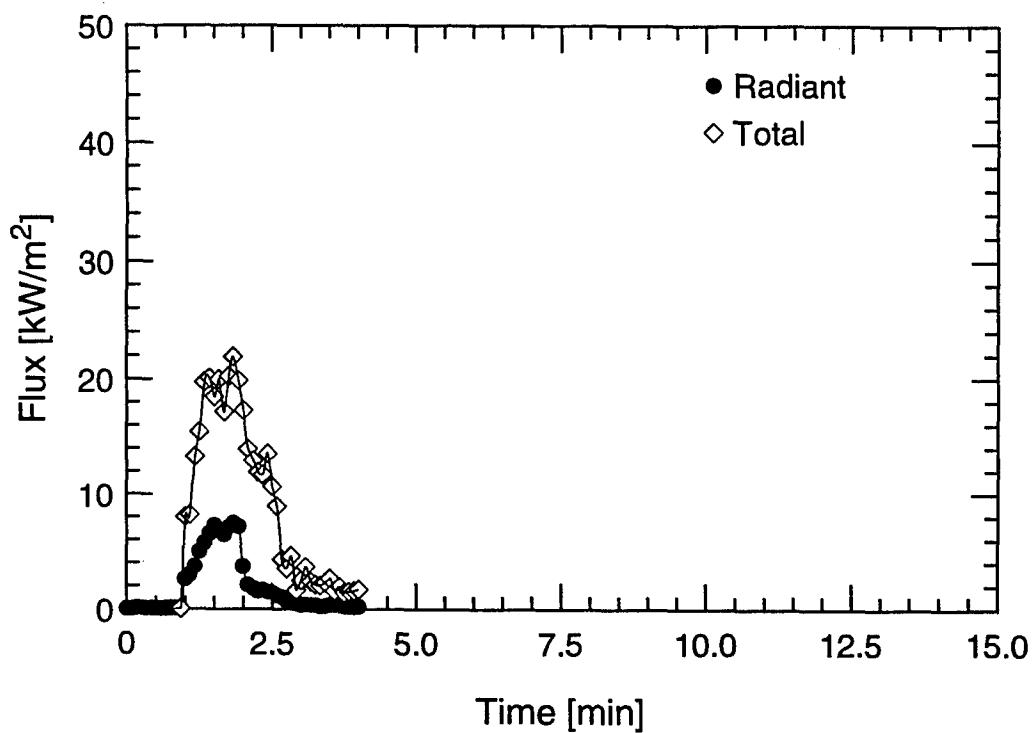
Forward Tree (Low)



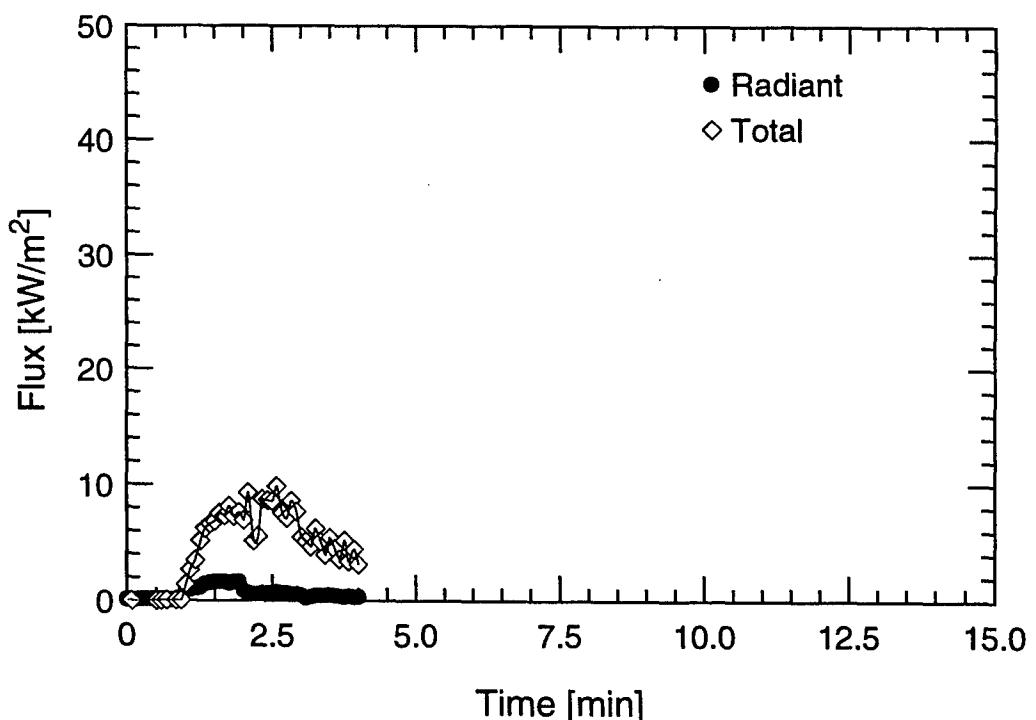
Forward Tree (High)

TEST #37

B-222



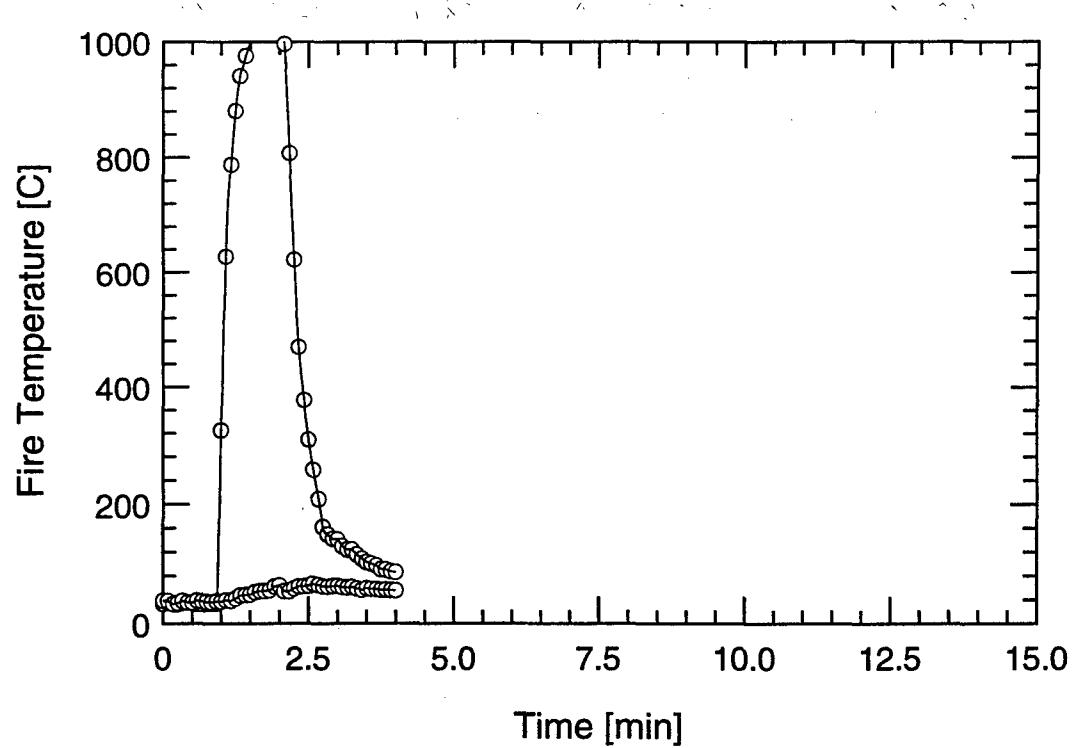
Overhead



Forward Bulkhead

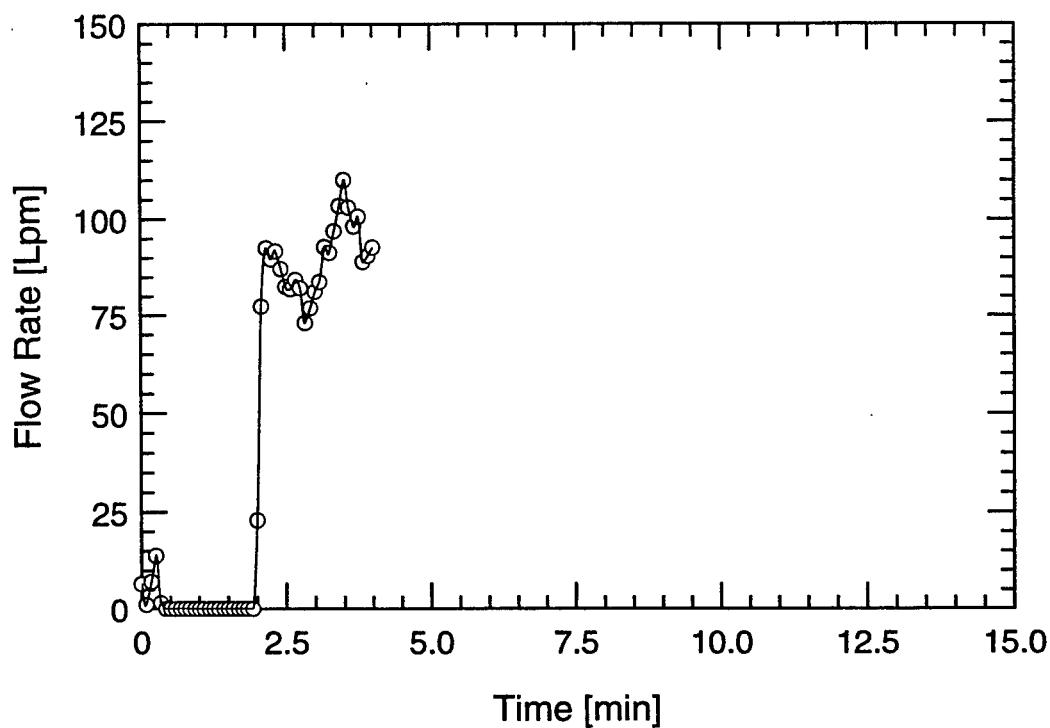
TEST #37

B-223

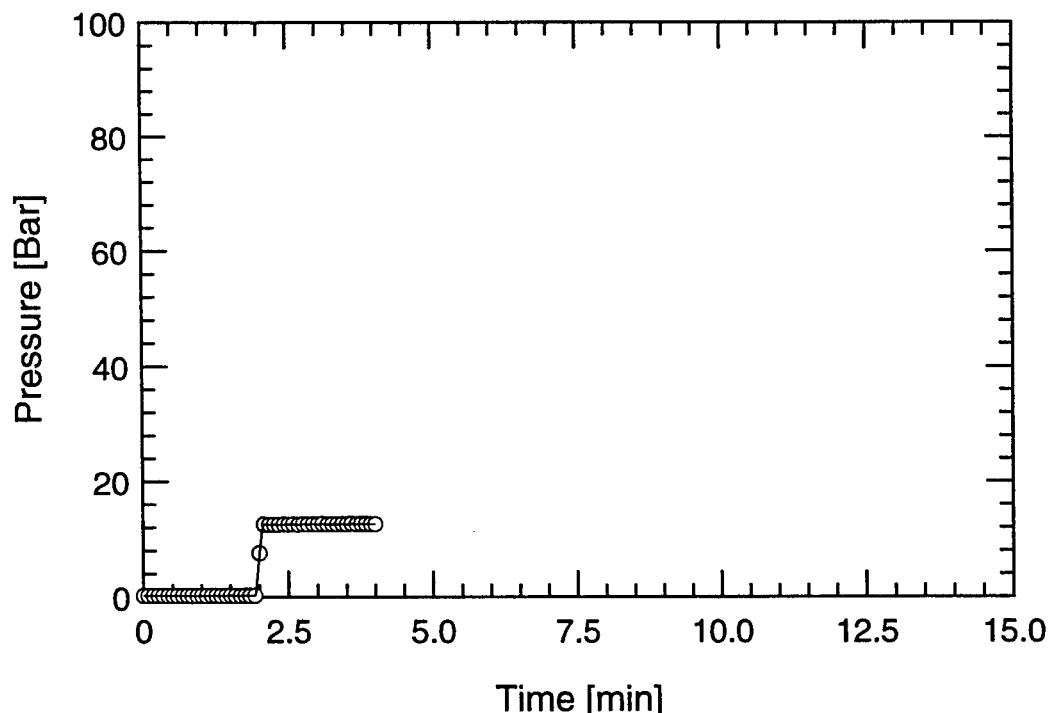


TEST #37

B-224



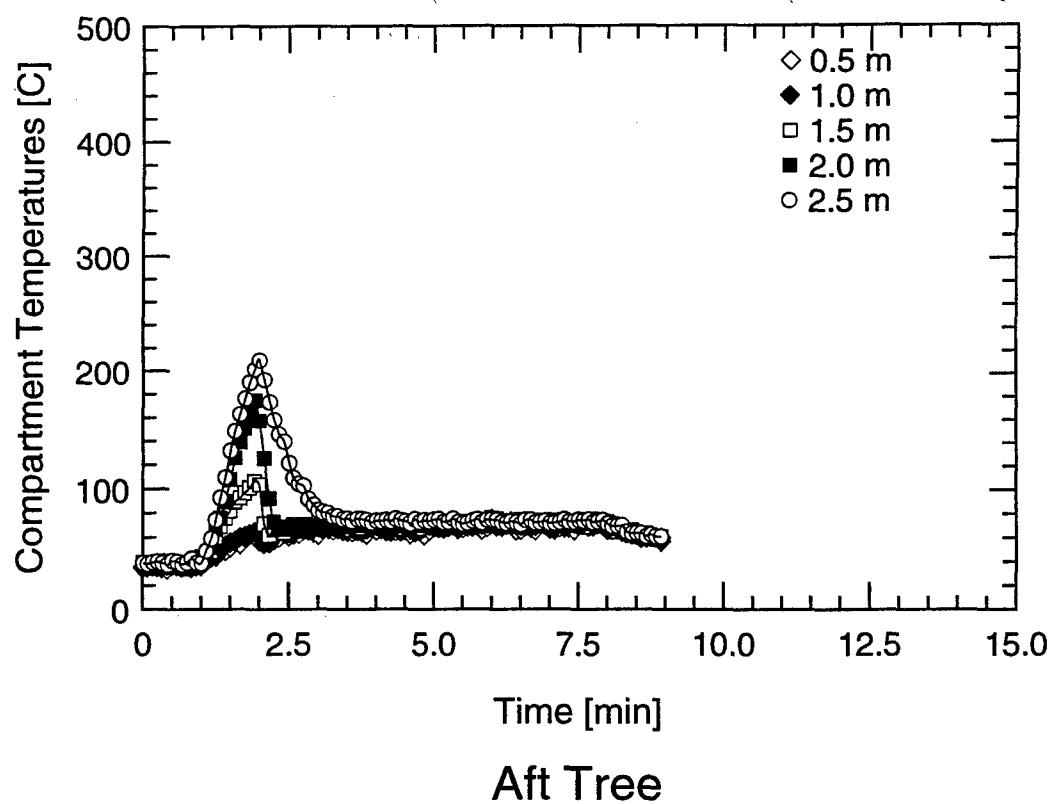
Water Mist System Flow Rate



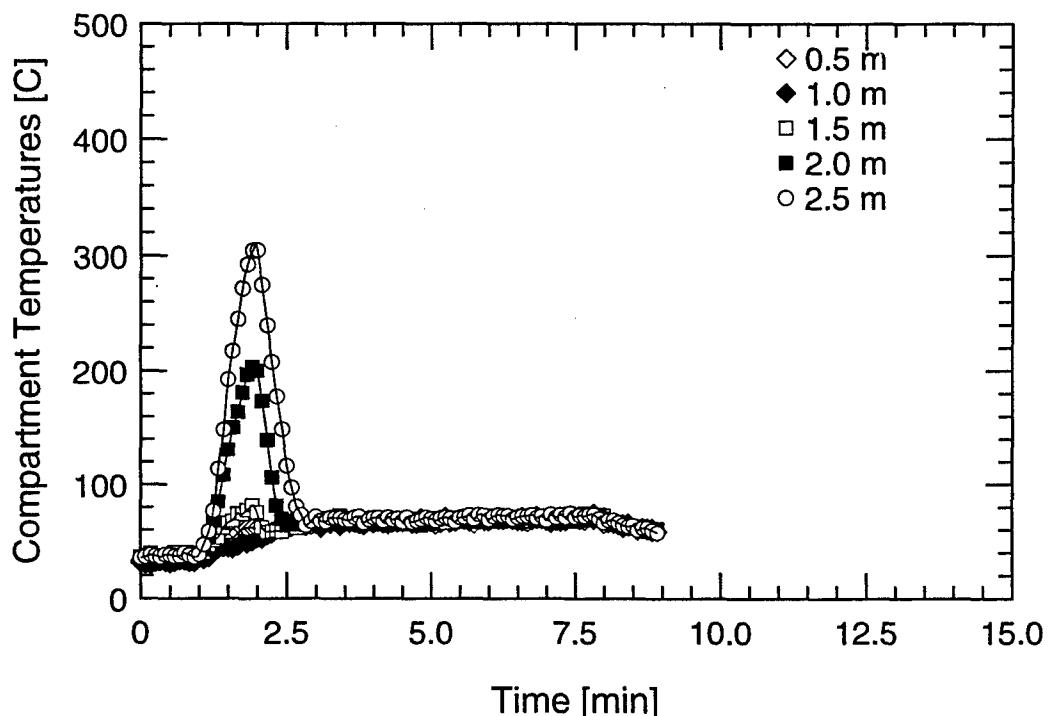
Water Mist System Pressure

TEST #37

B-225



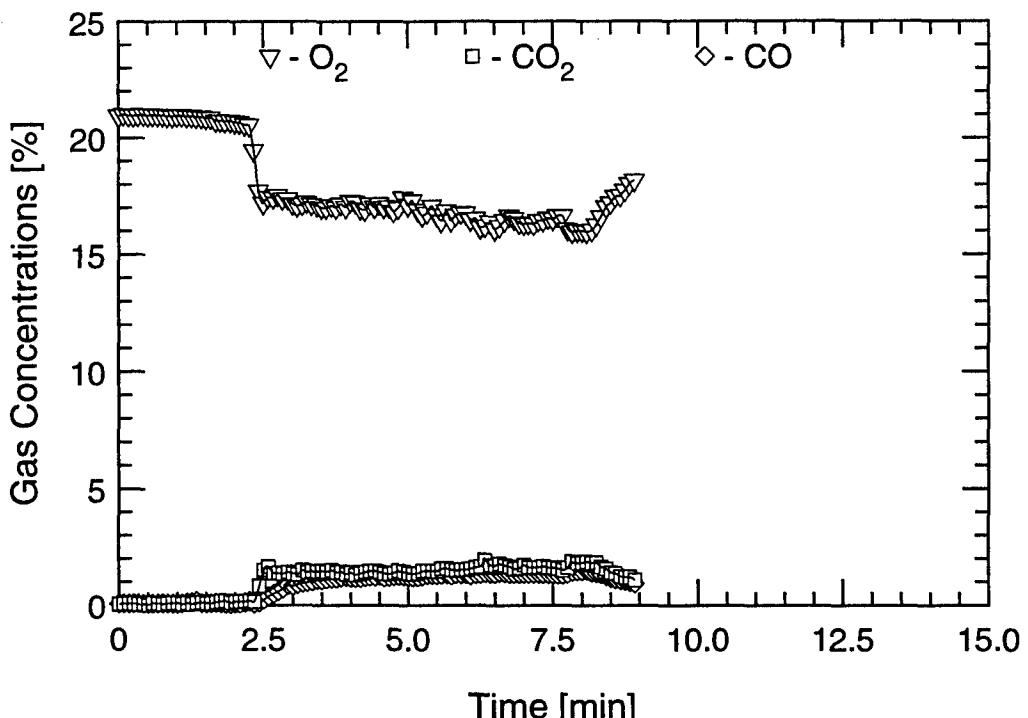
Aft Tree



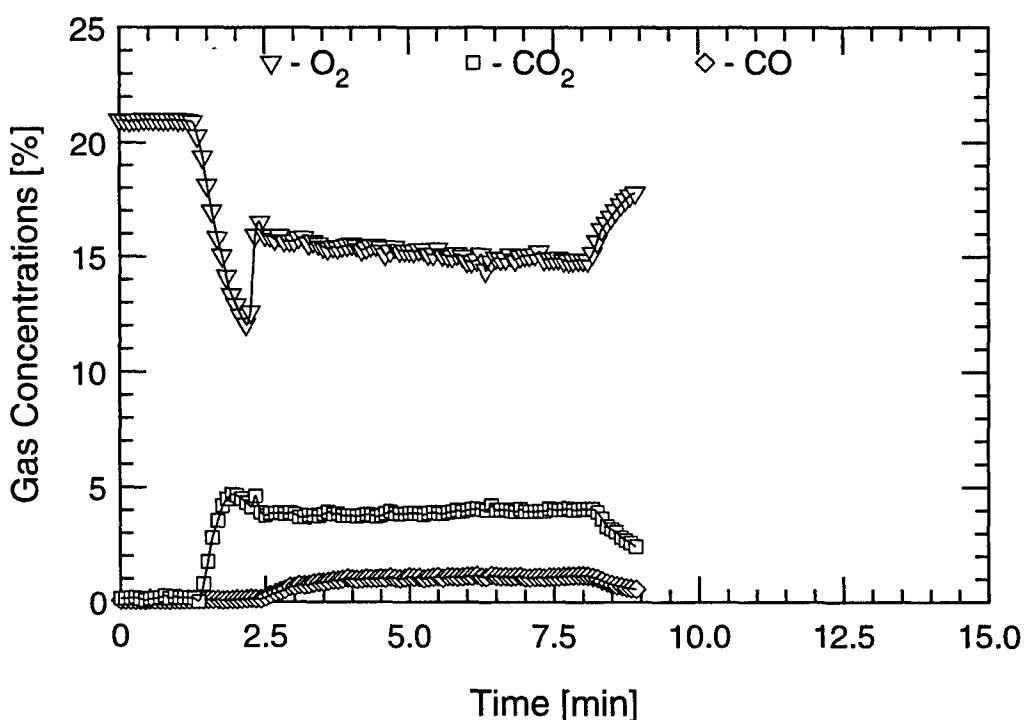
Forward Tree

TEST #38

B-226



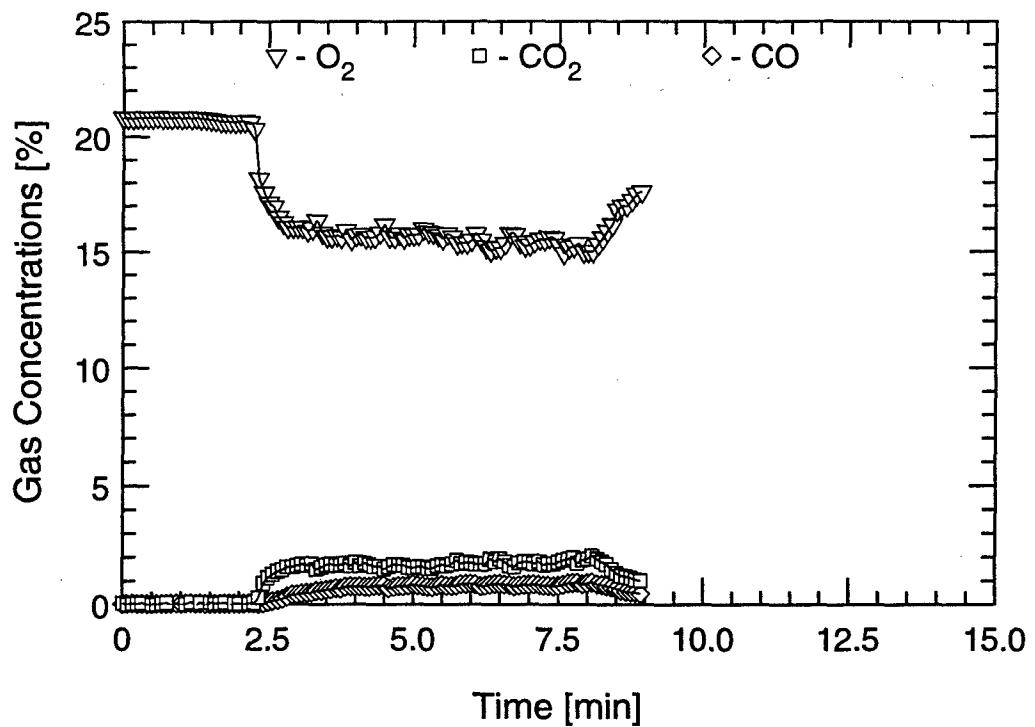
Aft Tree (Low)



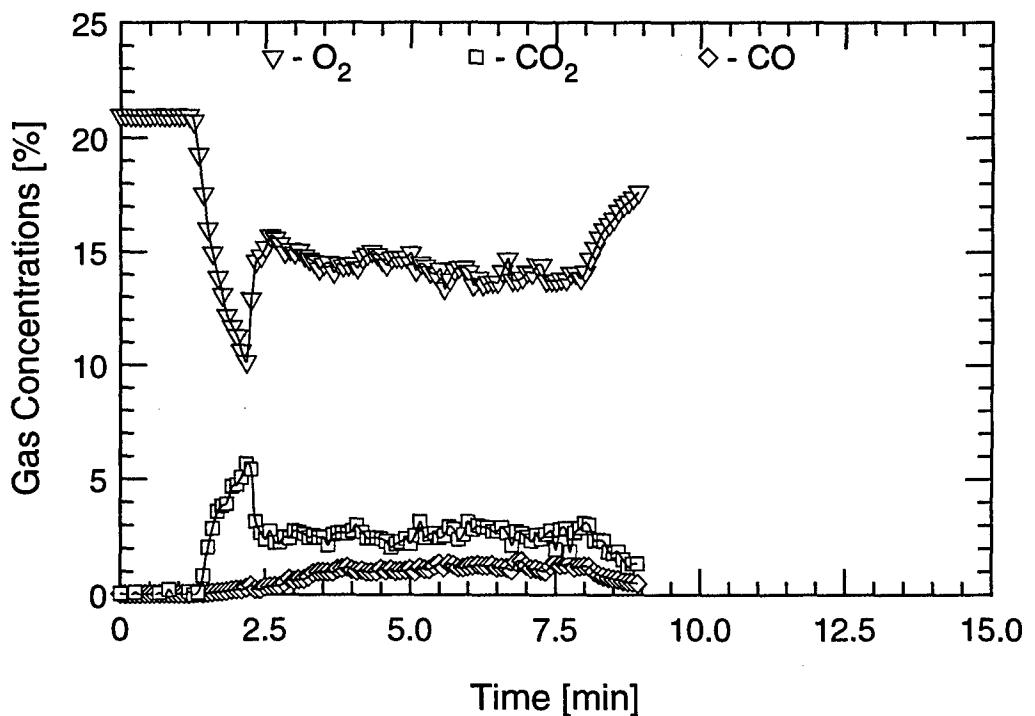
Aft Tree (High)

TEST #38

B-227

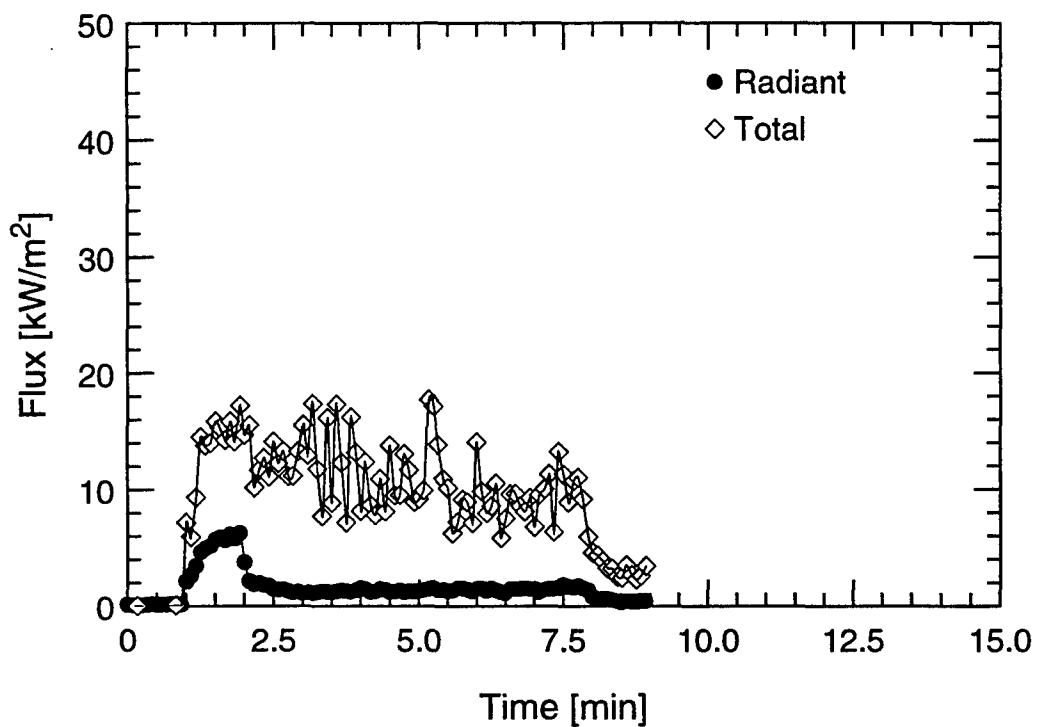


Forward Tree (Low)

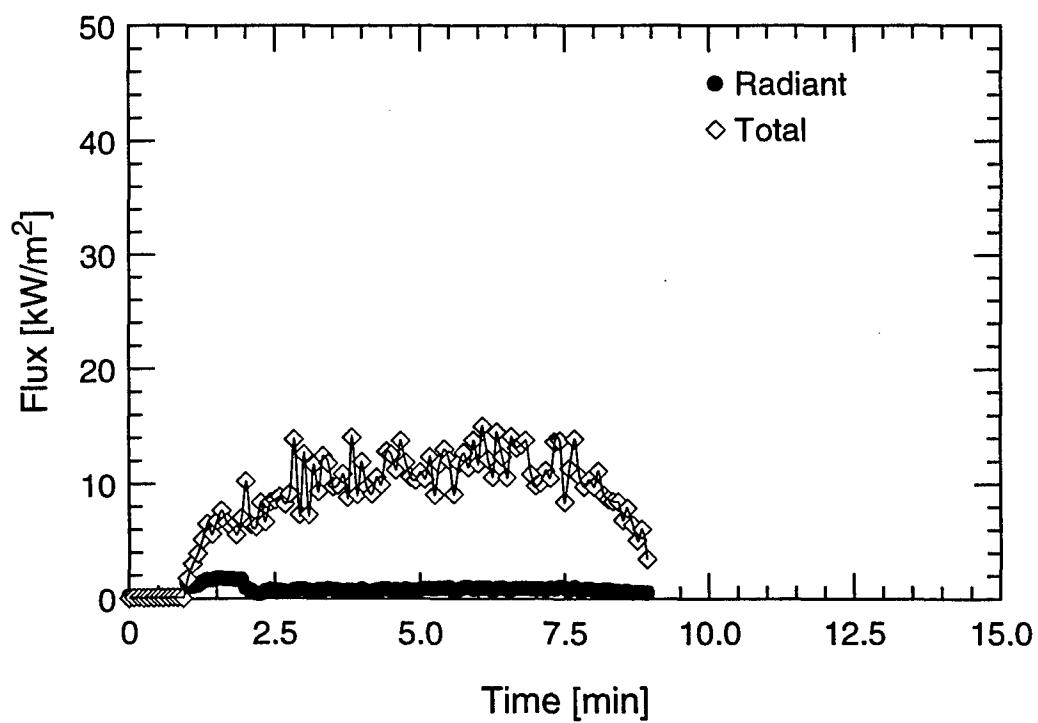


Forward Tree (High)

TEST #38



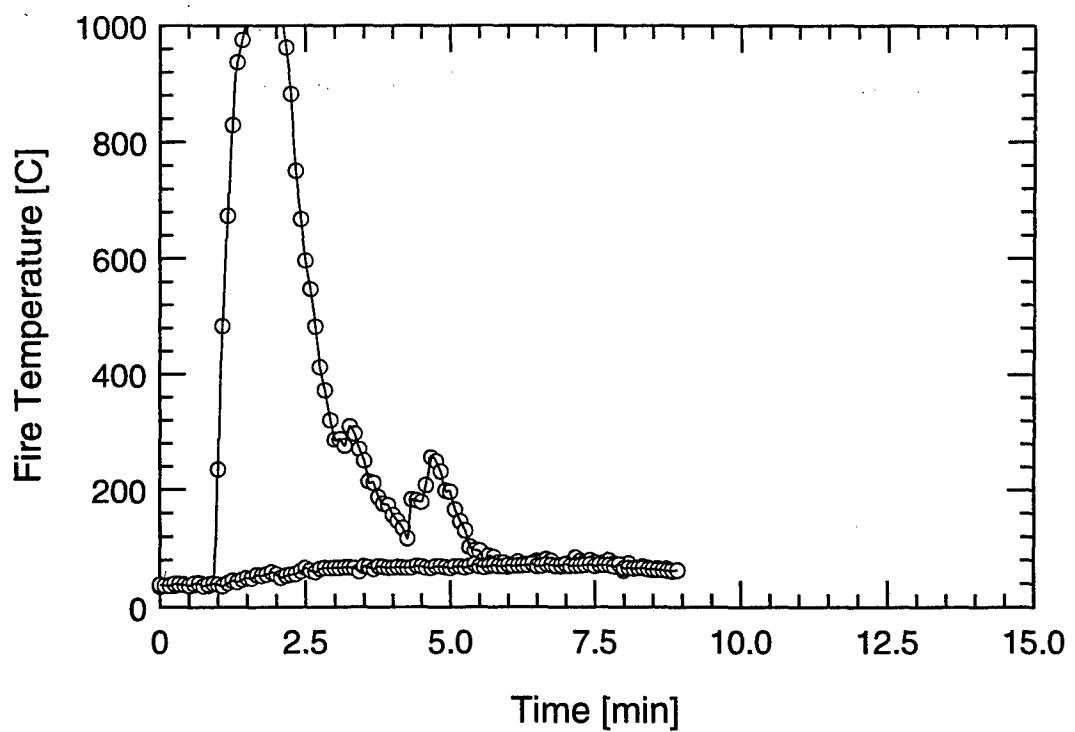
Overhead



Forward Bulkhead

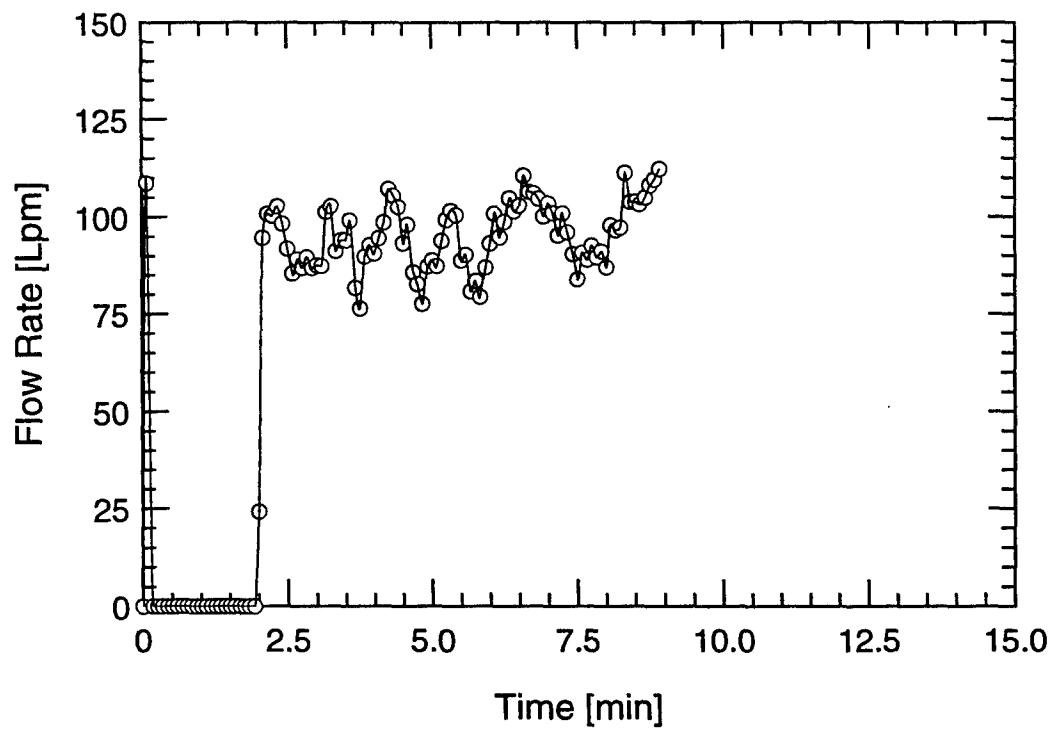
TEST #38

B-229

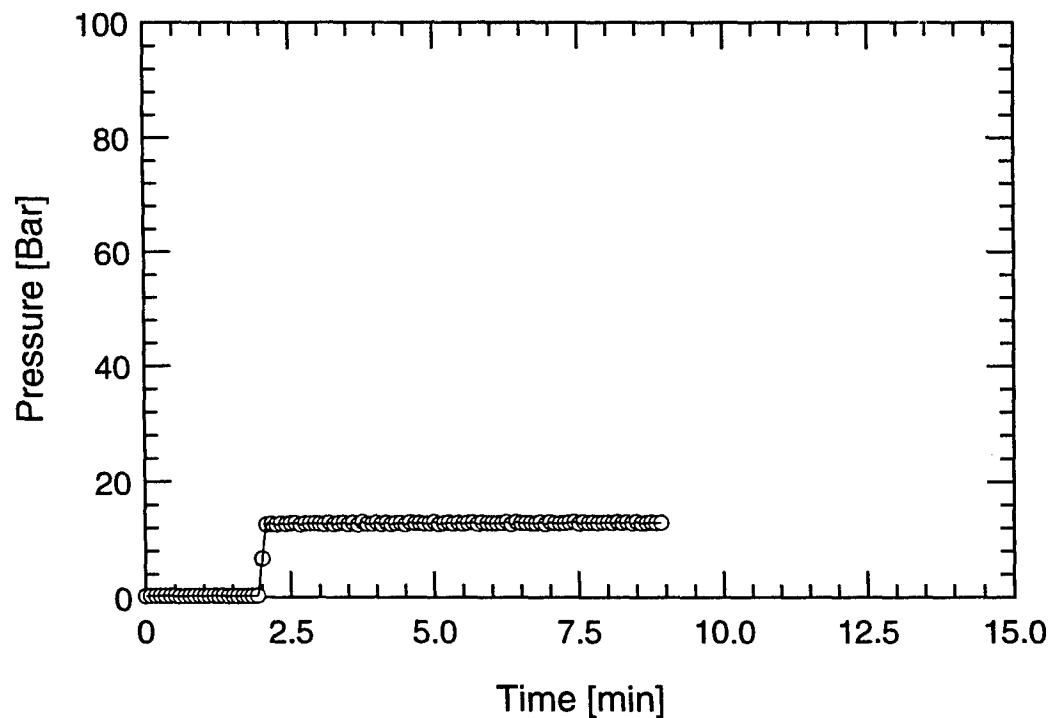


TEST #38

B-230

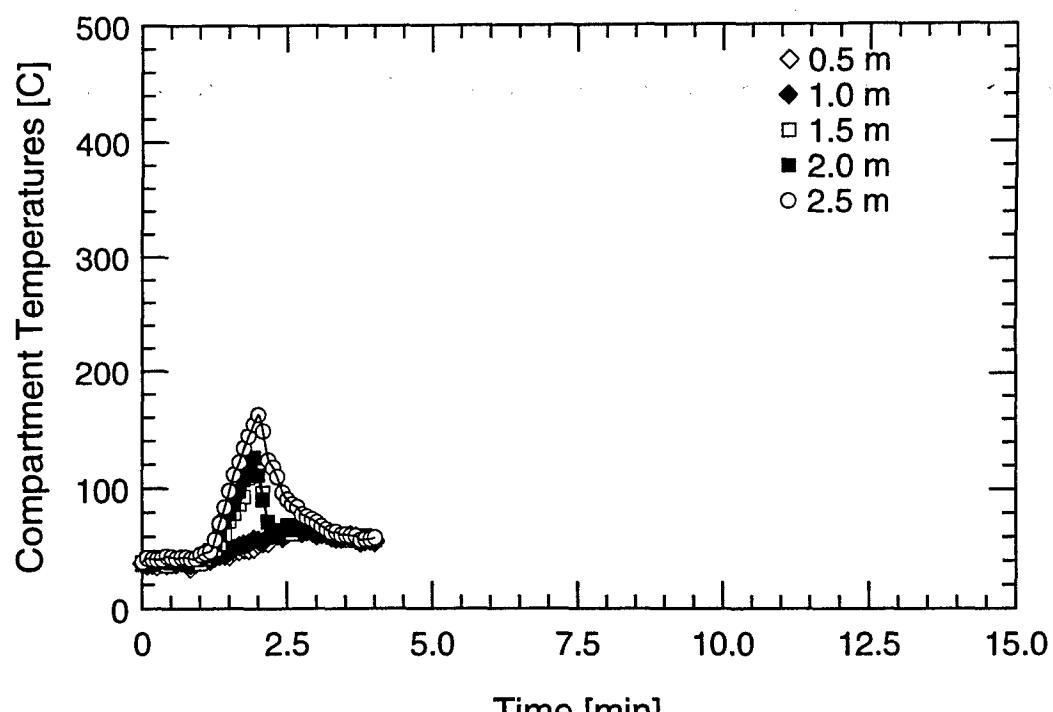


Water Mist System Flow Rate

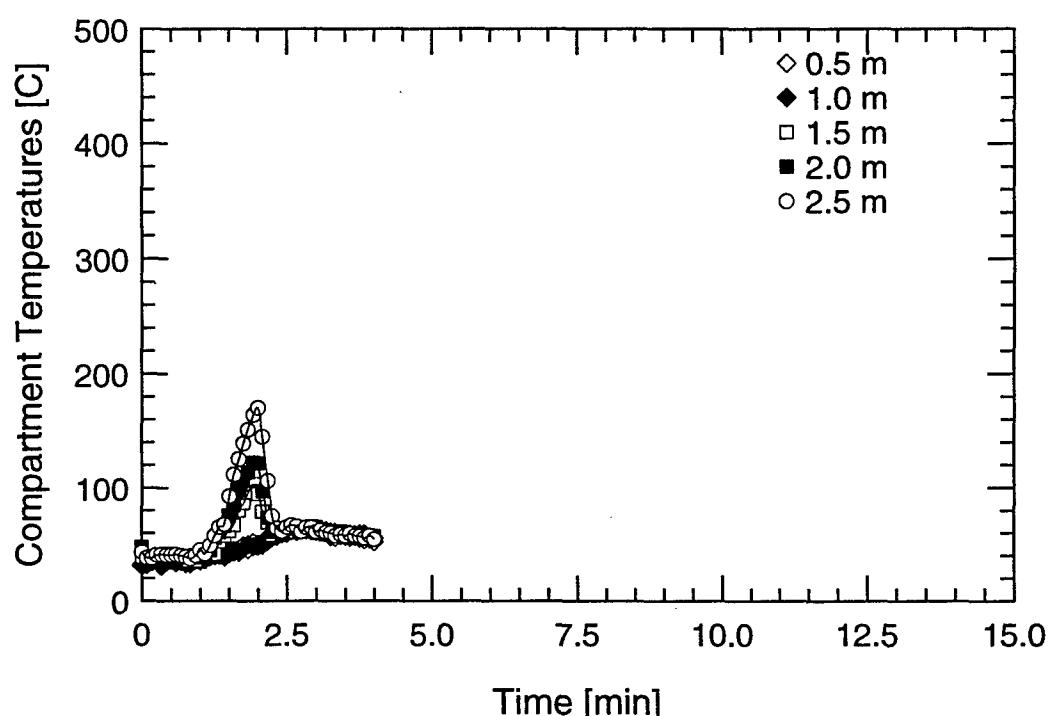


Water Mist System Pressure

TEST #38



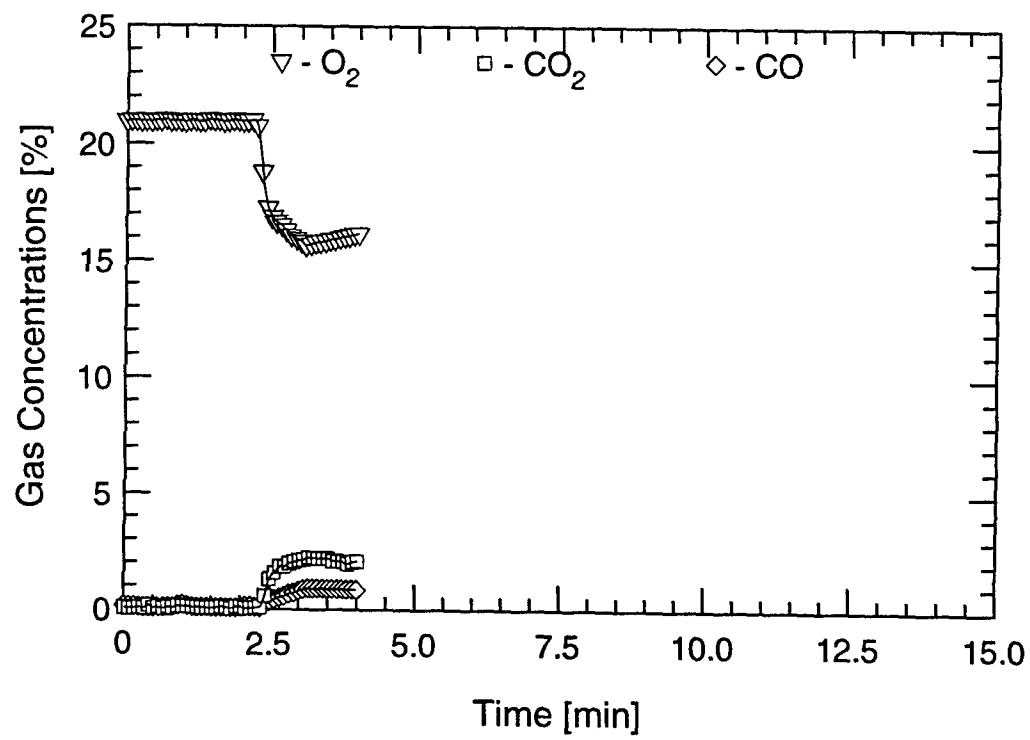
Aft Tree



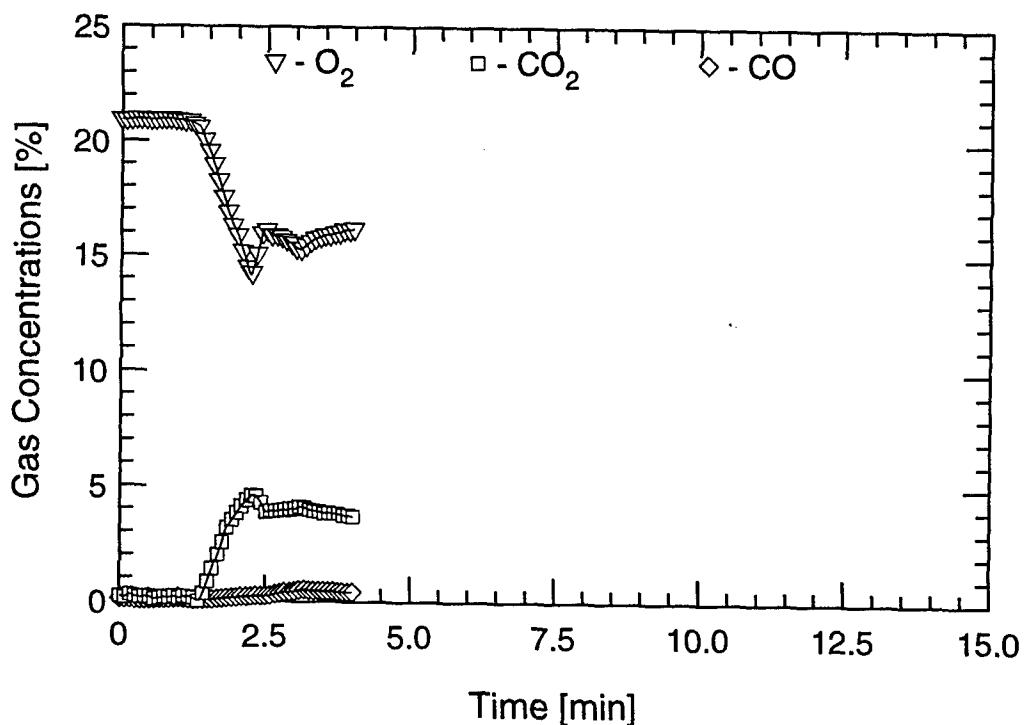
Forward Tree

TEST #39

B-232



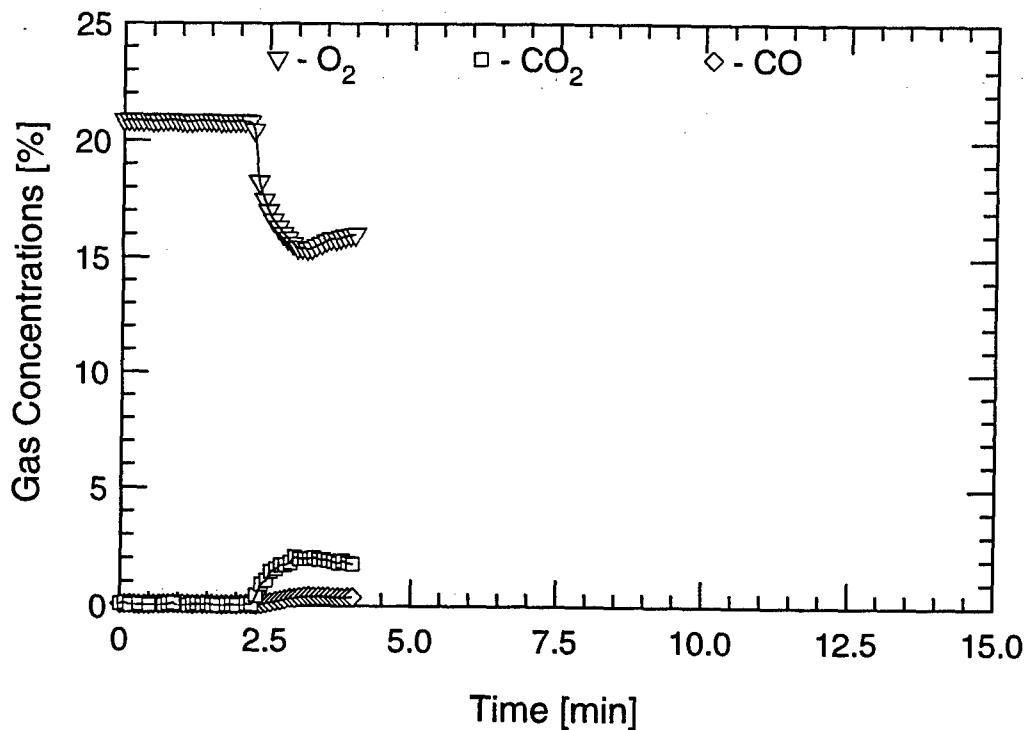
Aft Tree (Low)



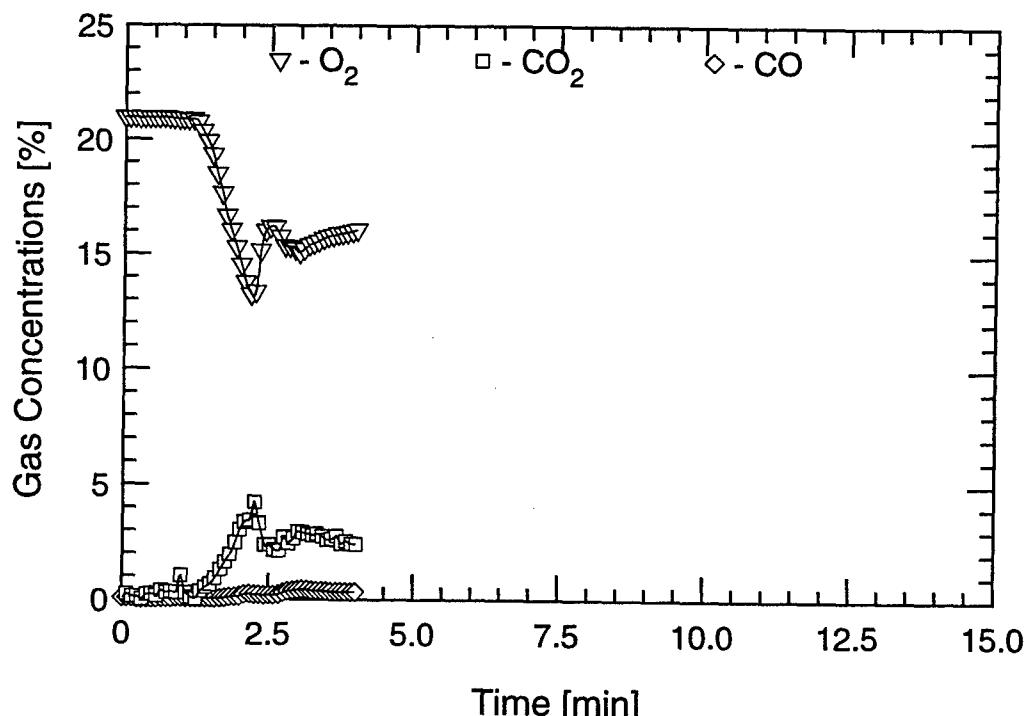
Aft Tree (High)

TEST #39

B-233



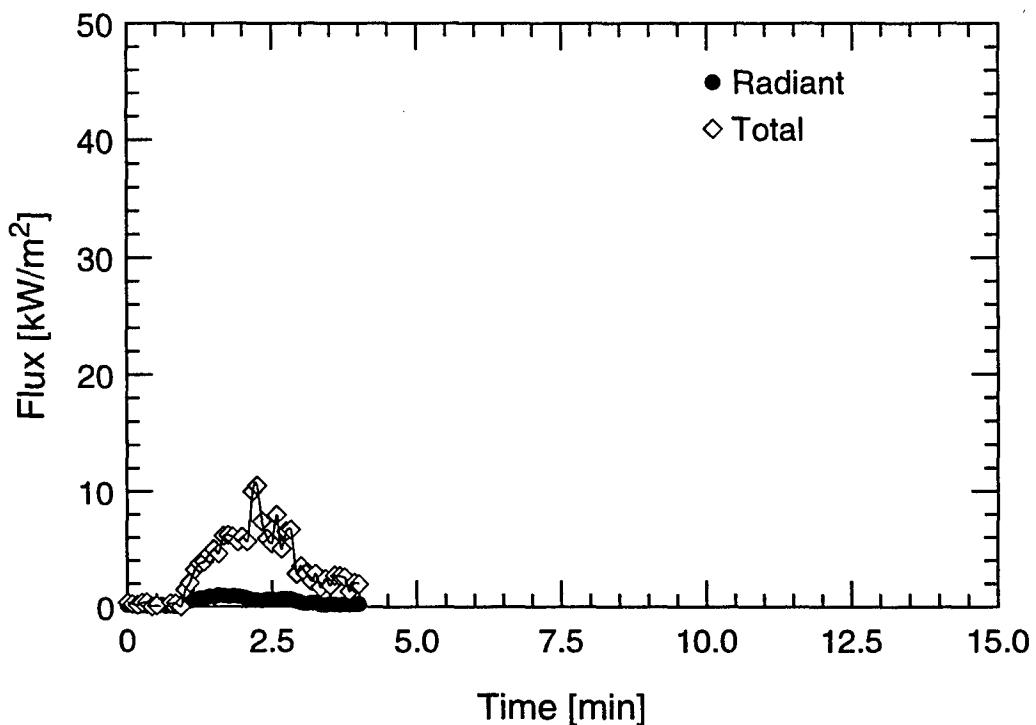
Forward Tree (Low)



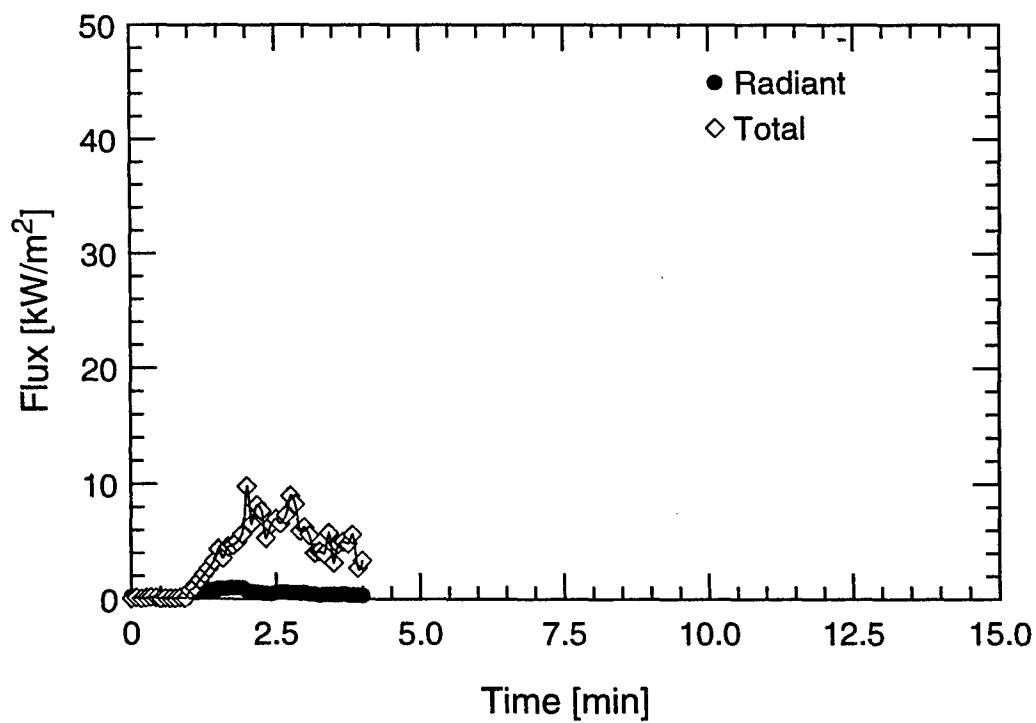
Forward Tree (High)

TEST #39

B-234



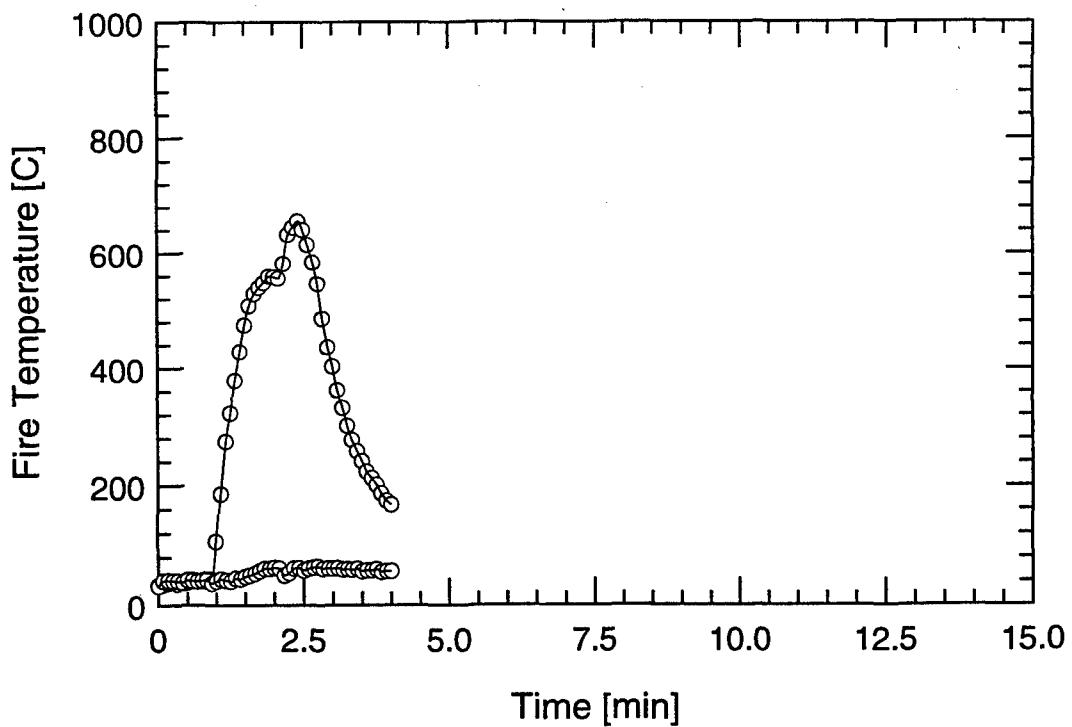
Overhead



Forward Bulkhead

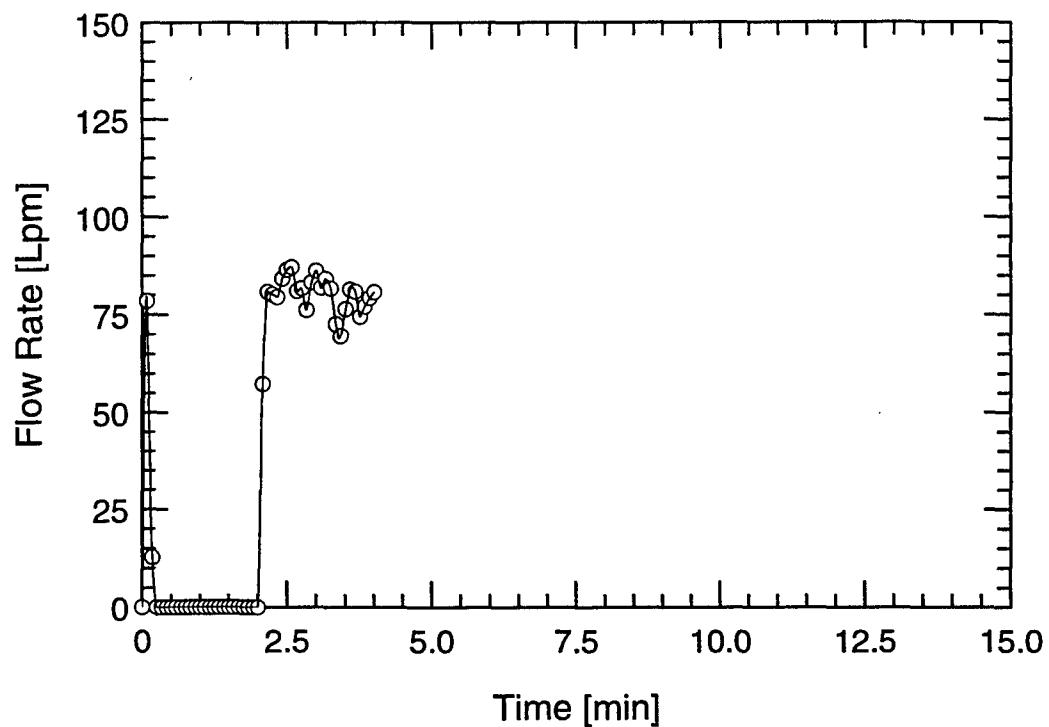
TEST #39

B-235

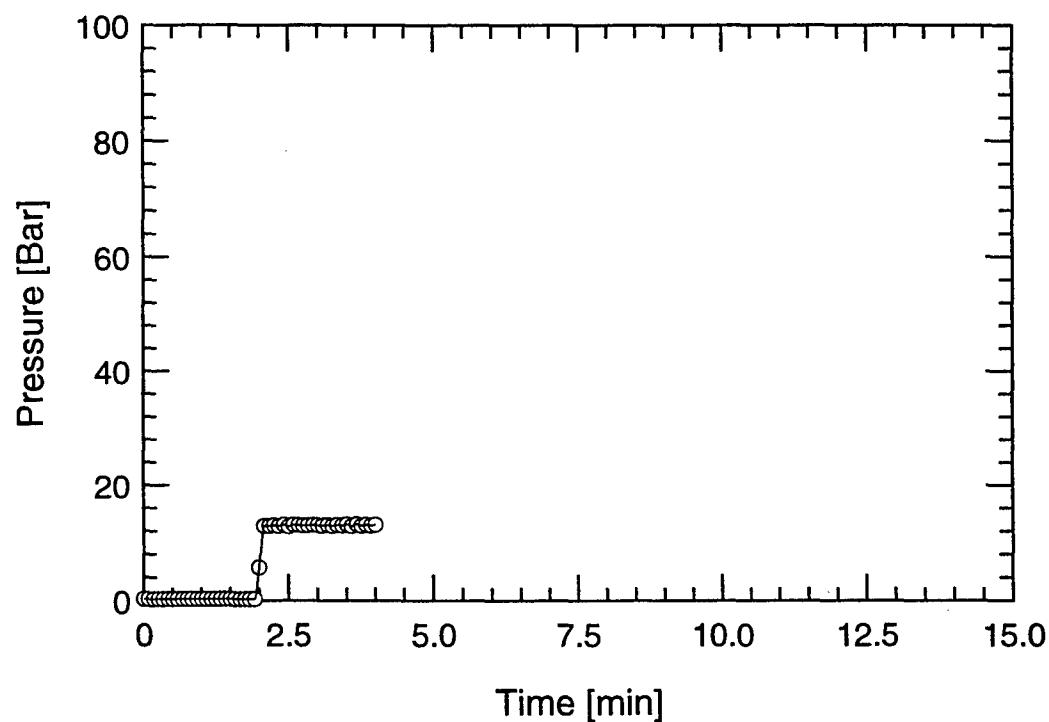


TEST #39

B-236

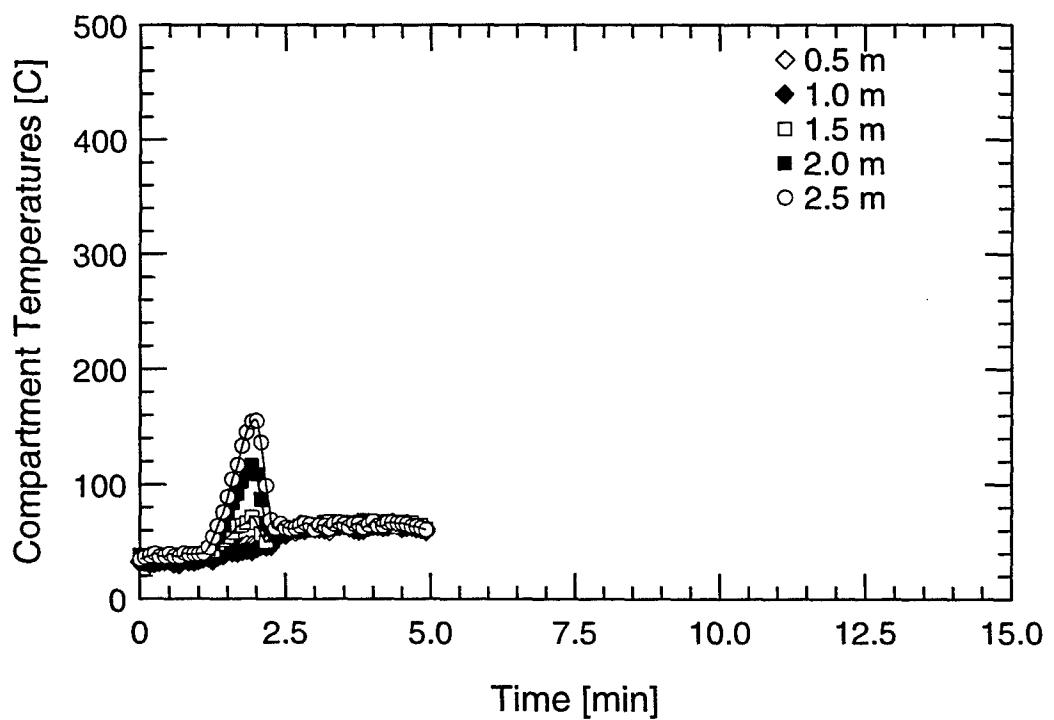
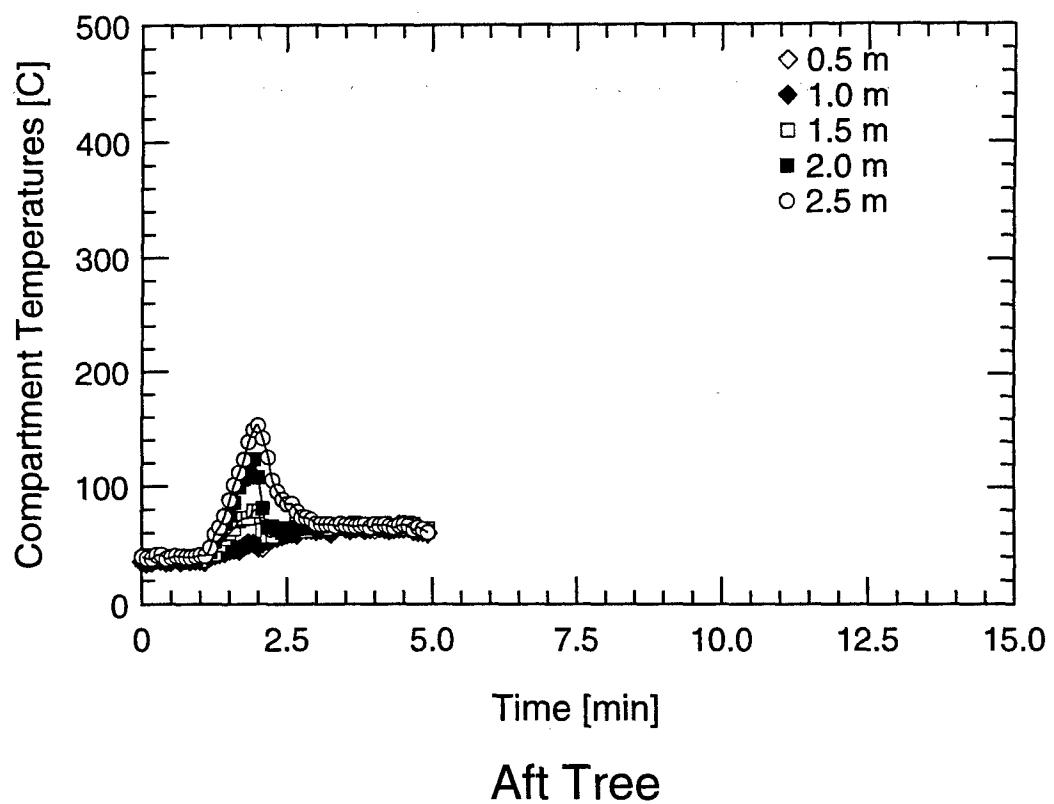


Water Mist System Flow Rate



Water Mist System Pressure

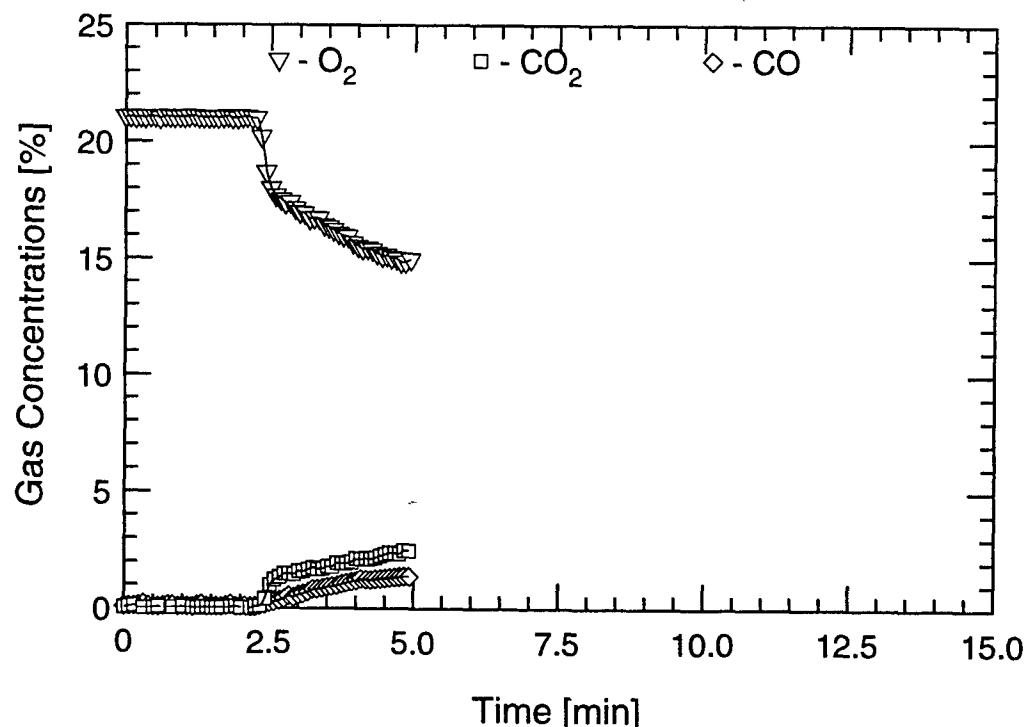
TEST #39



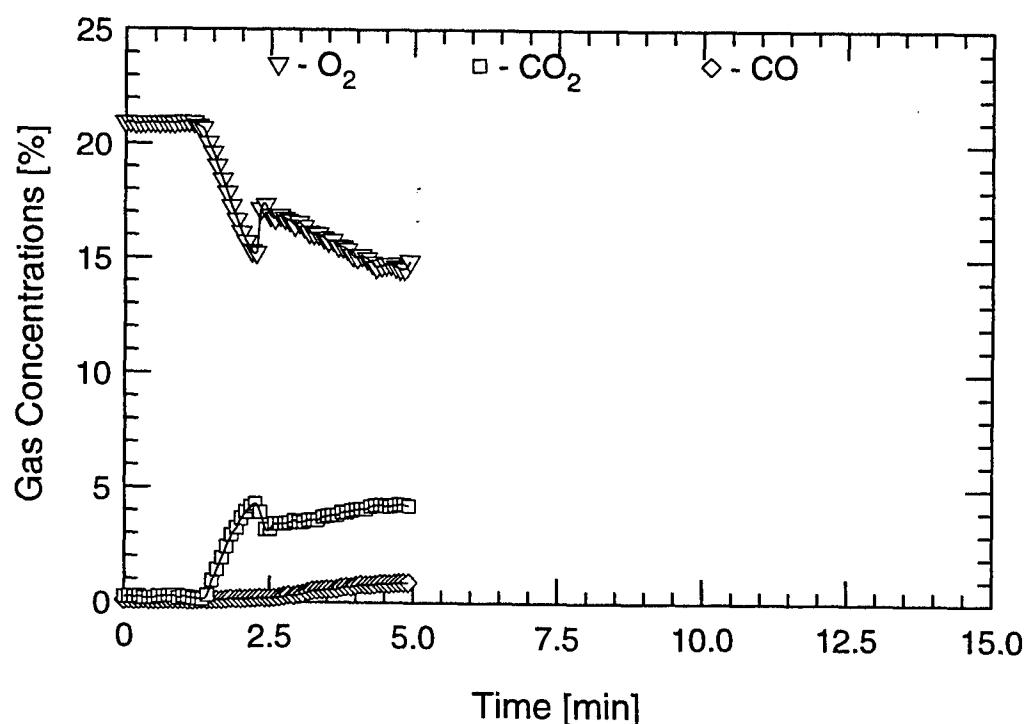
Forward Tree

TEST #40

B-238



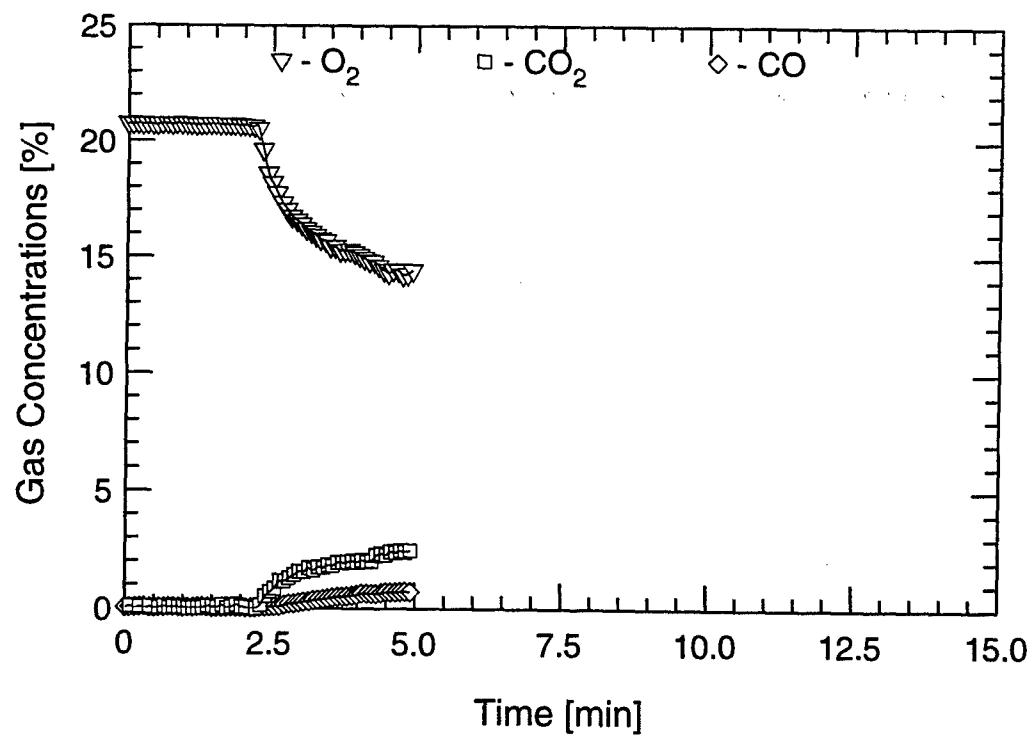
Aft Tree (Low)



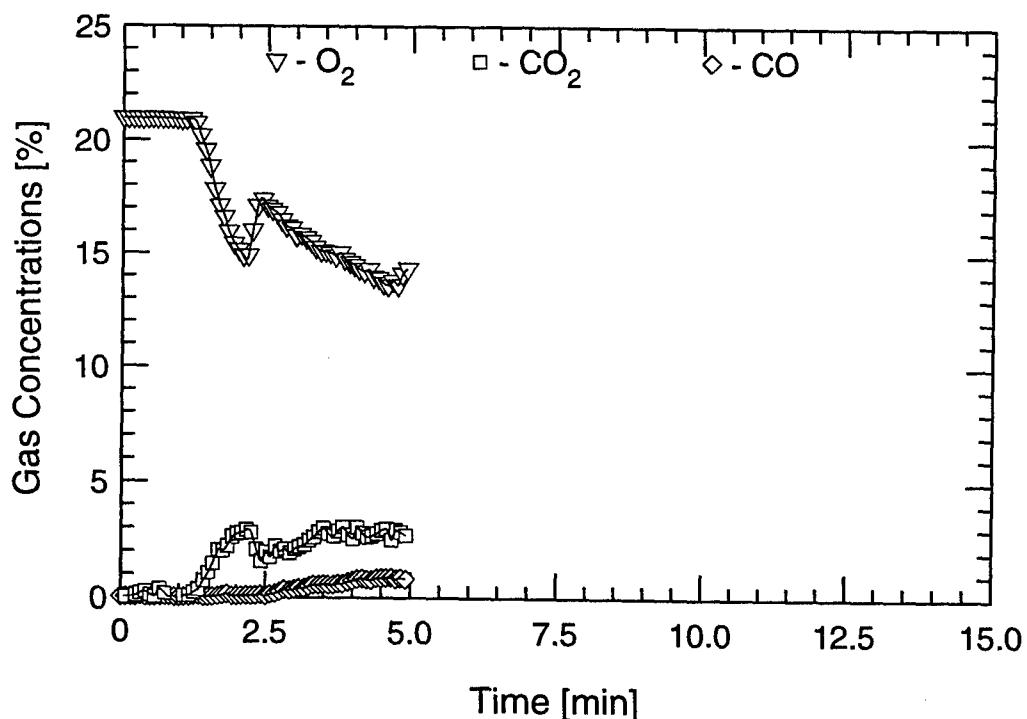
Aft Tree (High)

TEST #40

B-239



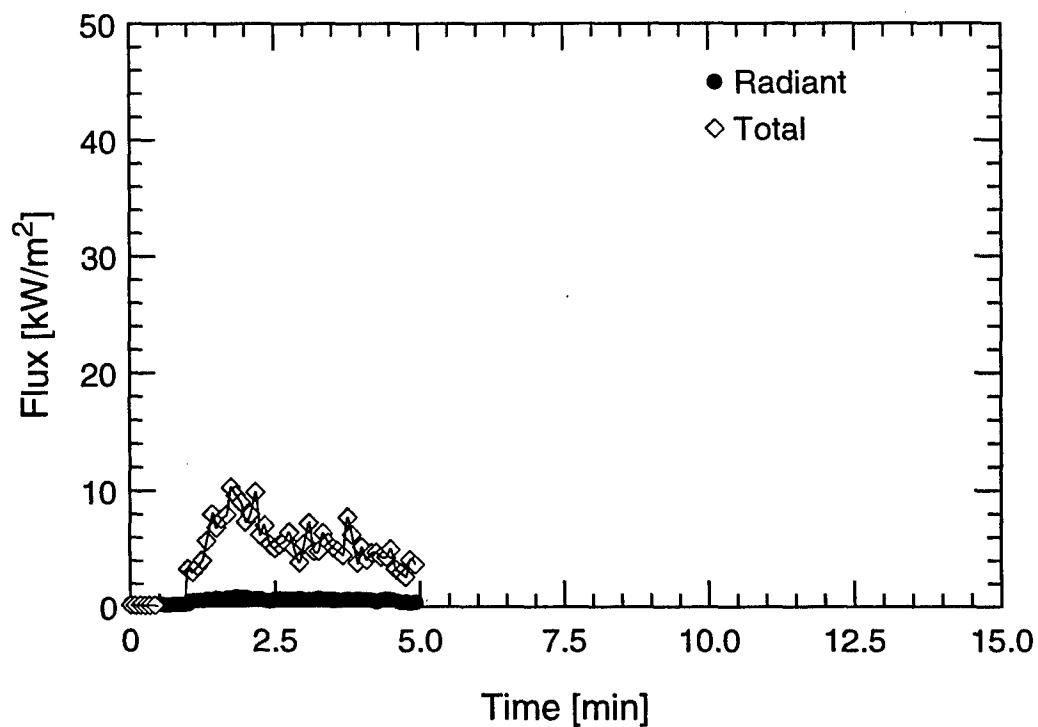
Forward Tree (Low)



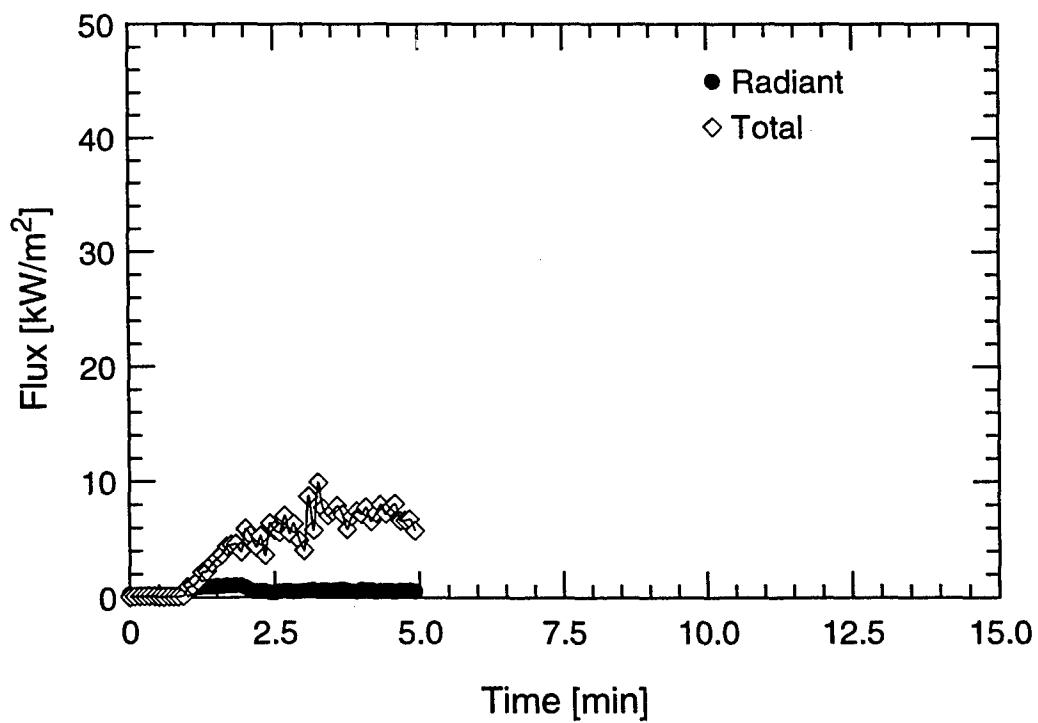
Forward Tree (High)

TEST #40

B-240



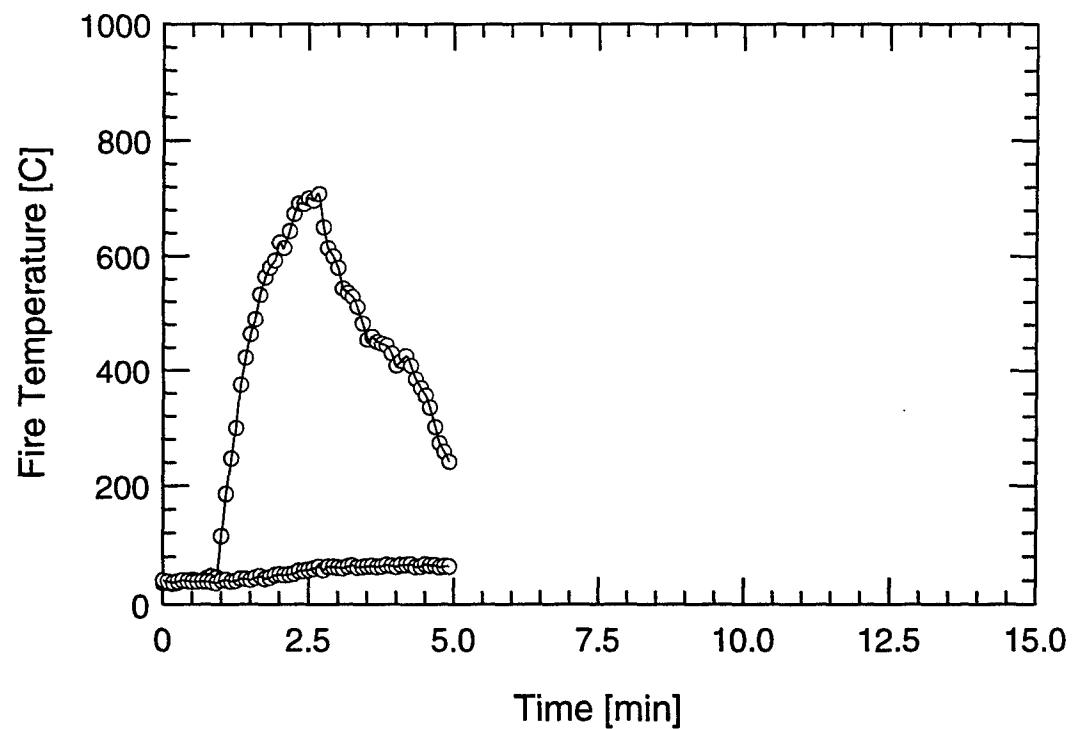
Overhead



Forward Bulkhead

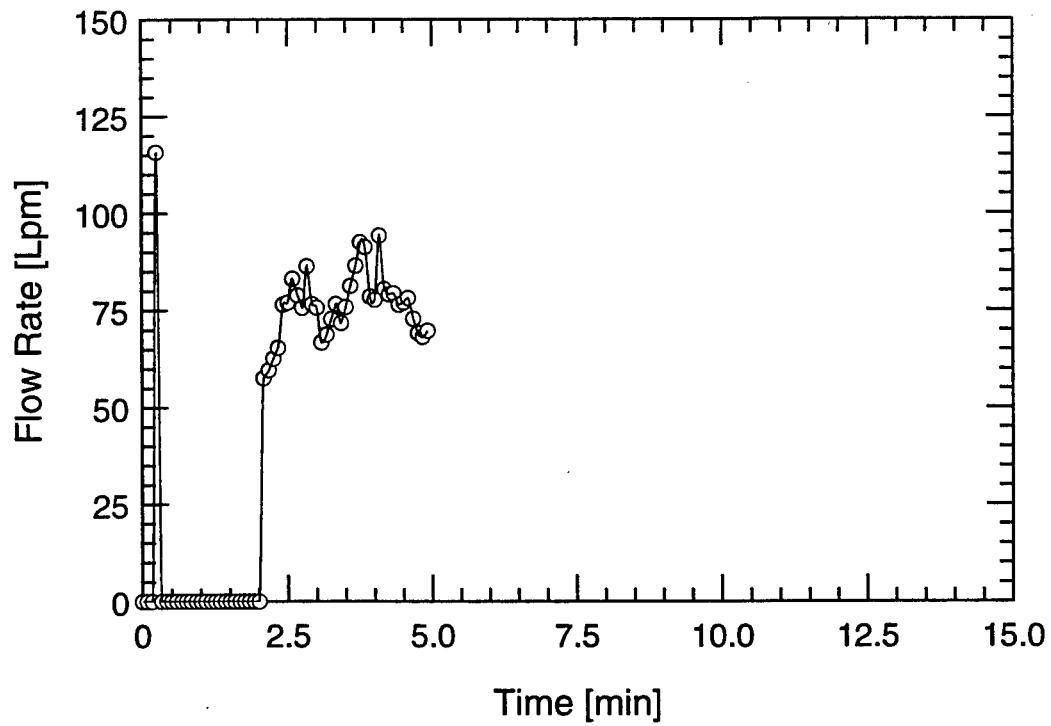
TEST #40

B-241

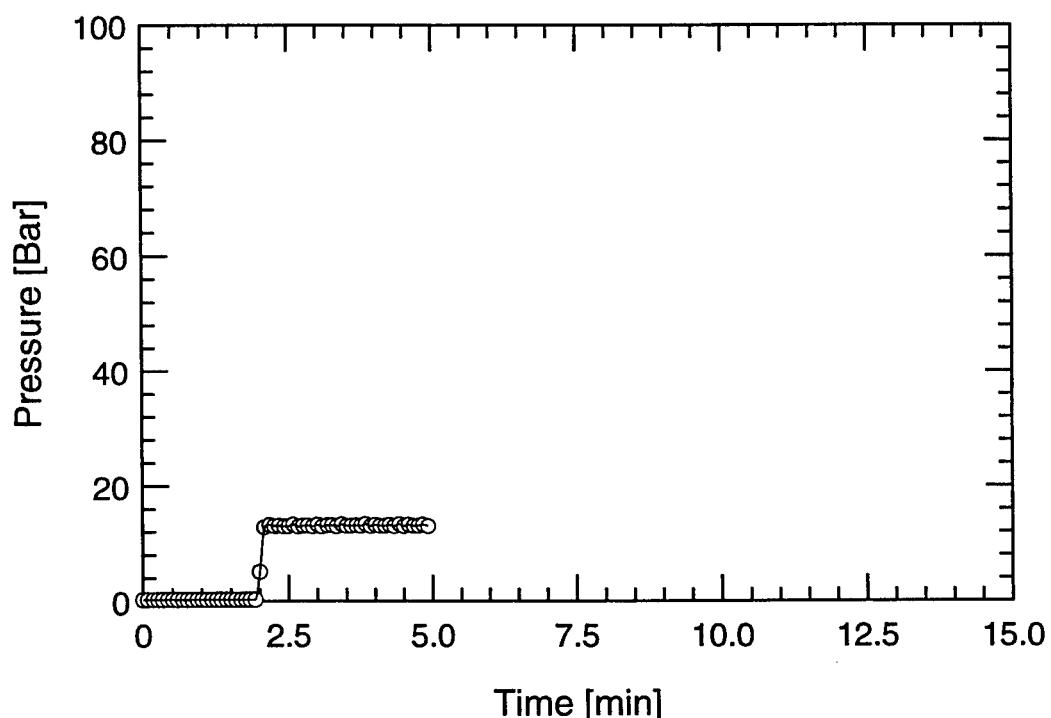


TEST #40

B-242



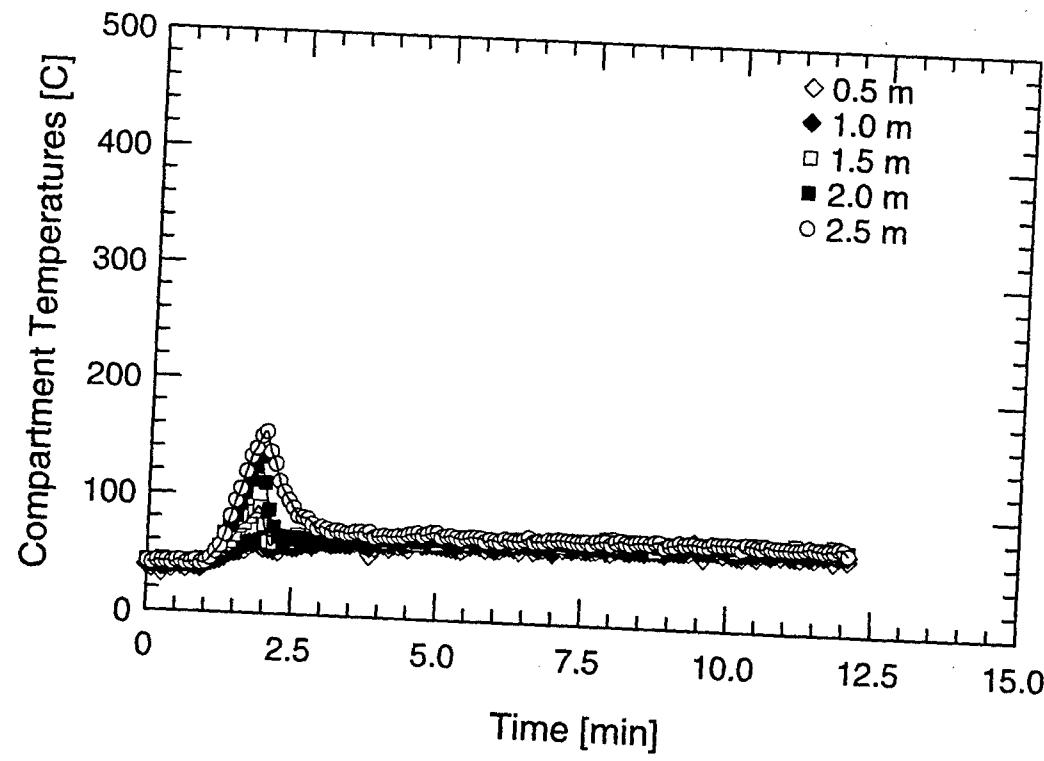
Water Mist System Flow Rate



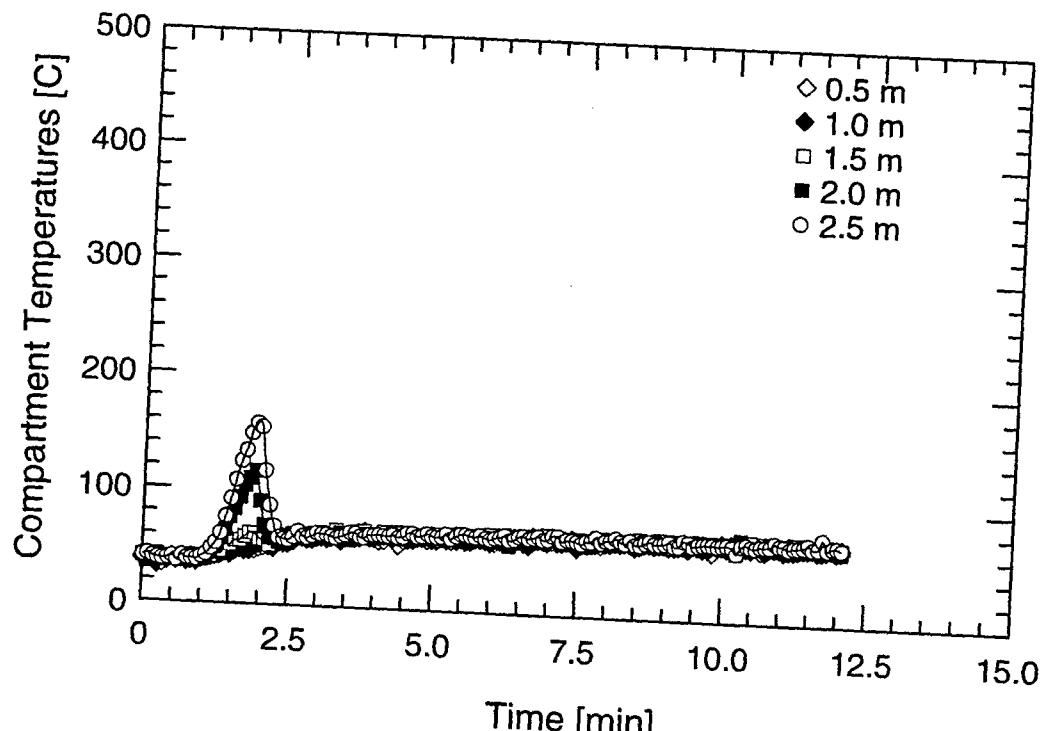
Water Mist System Pressure

TEST #40

B-243



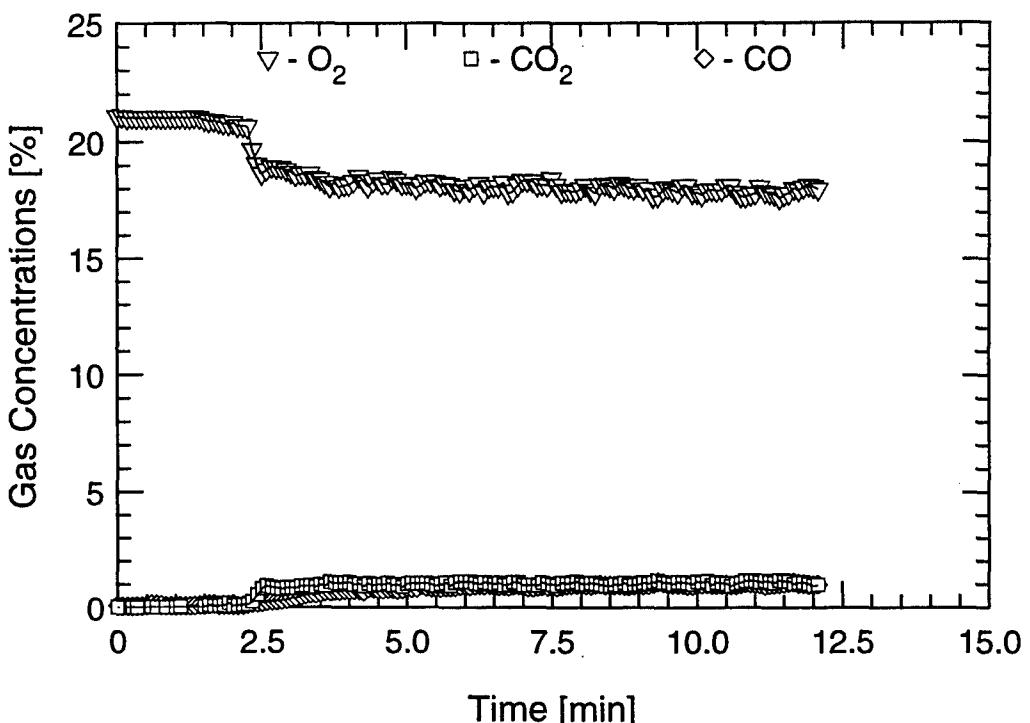
Aft Tree



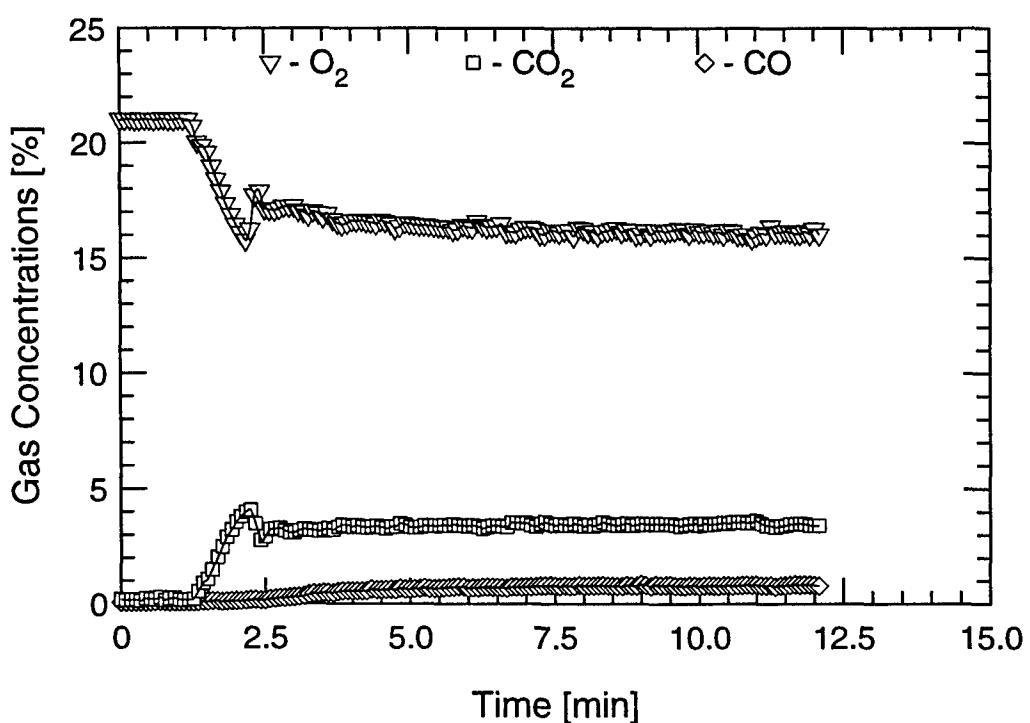
Forward Tree

TEST #41

B-244



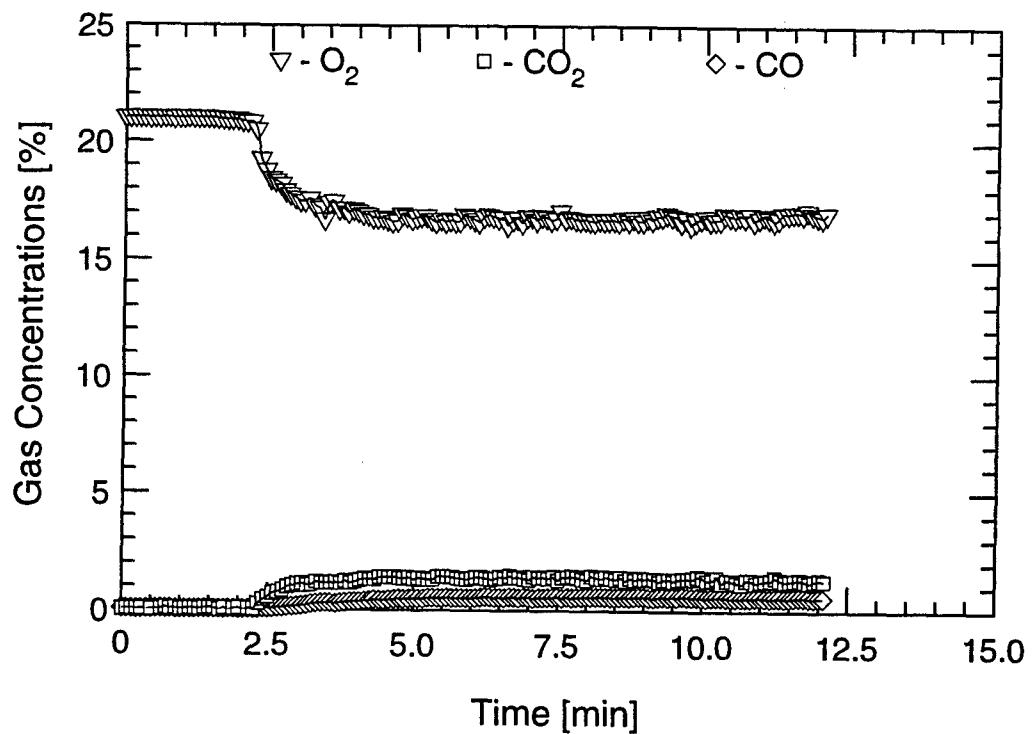
Aft Tree (Low)



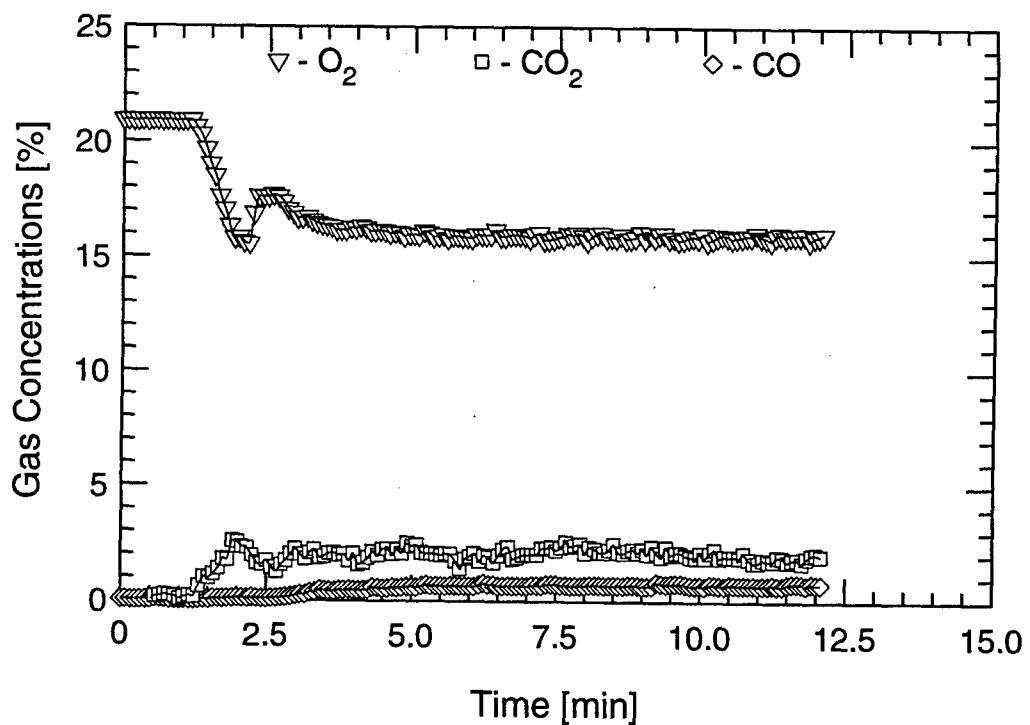
Aft Tree (High)

TEST #41

B-245



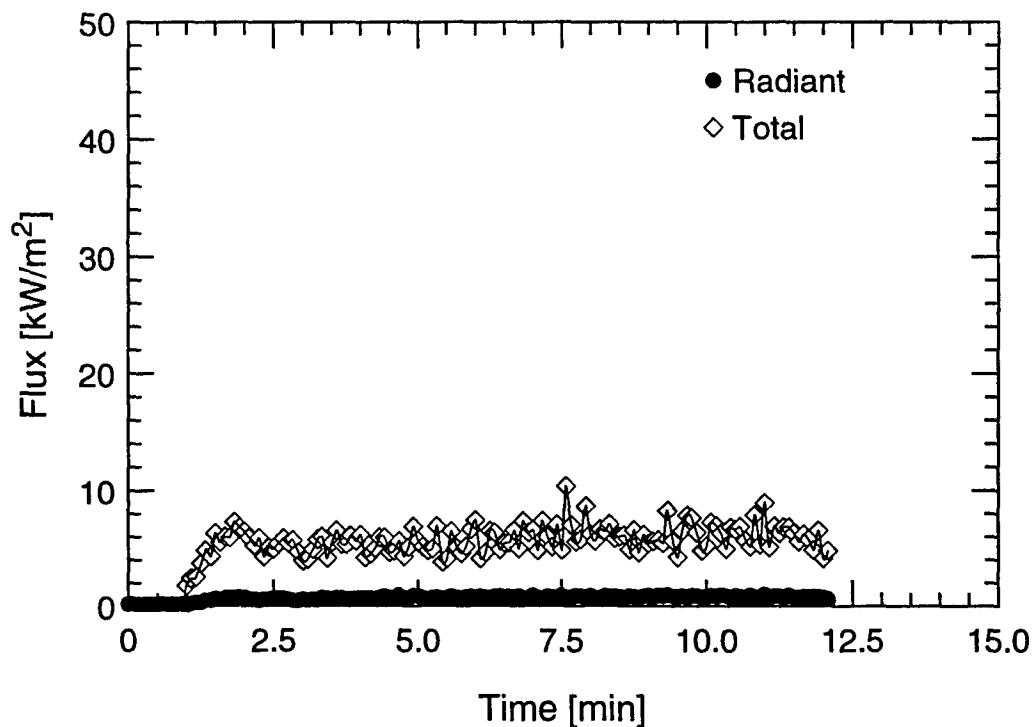
Forward Tree (Low)



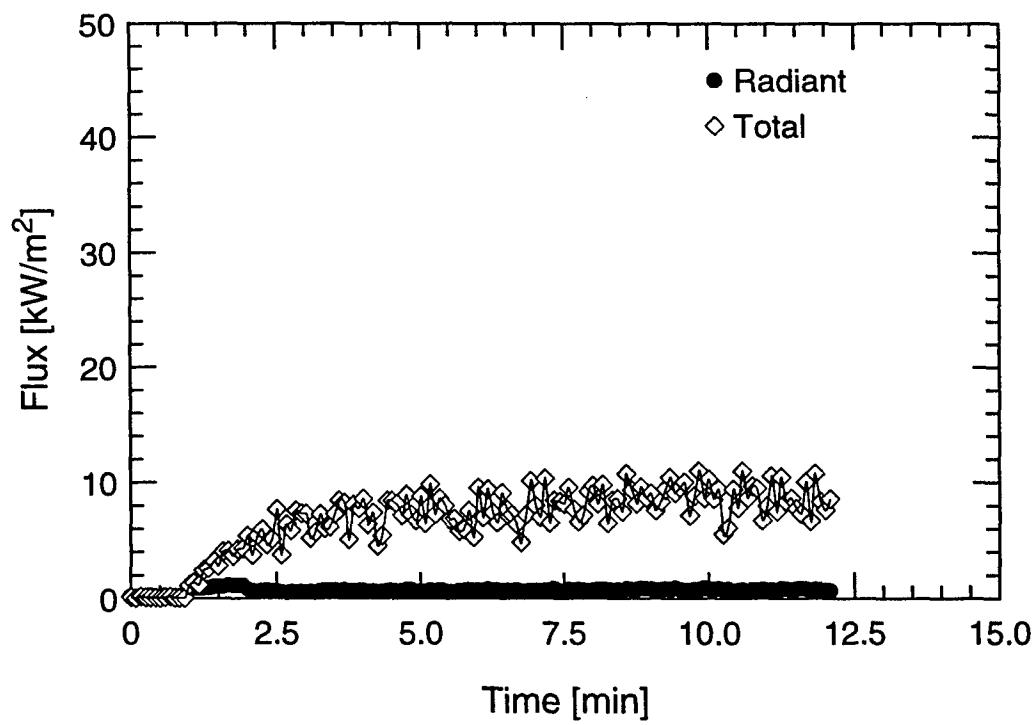
Forward Tree (High)

TEST #41

B-246



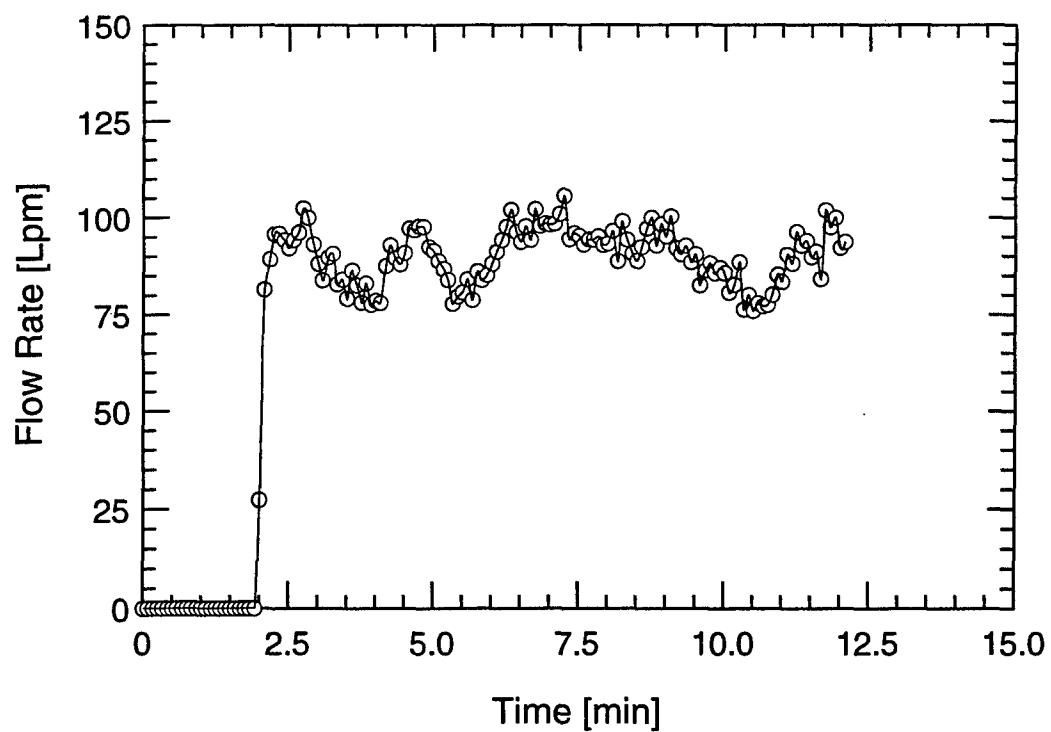
Overhead



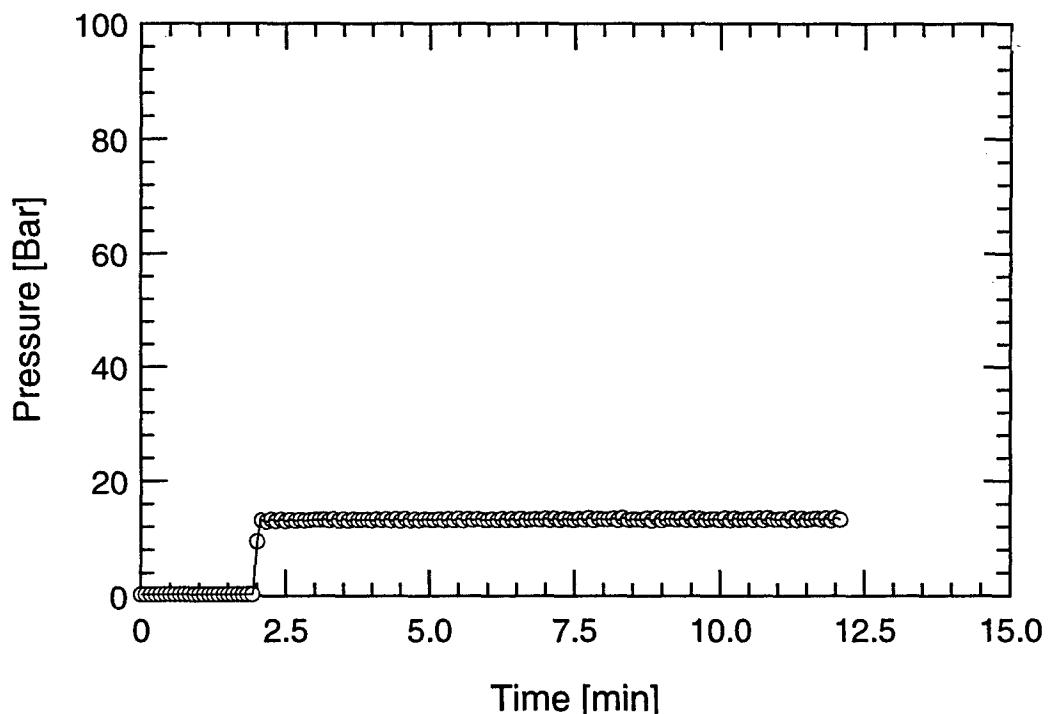
Forward Bulkhead

TEST #41

B-247



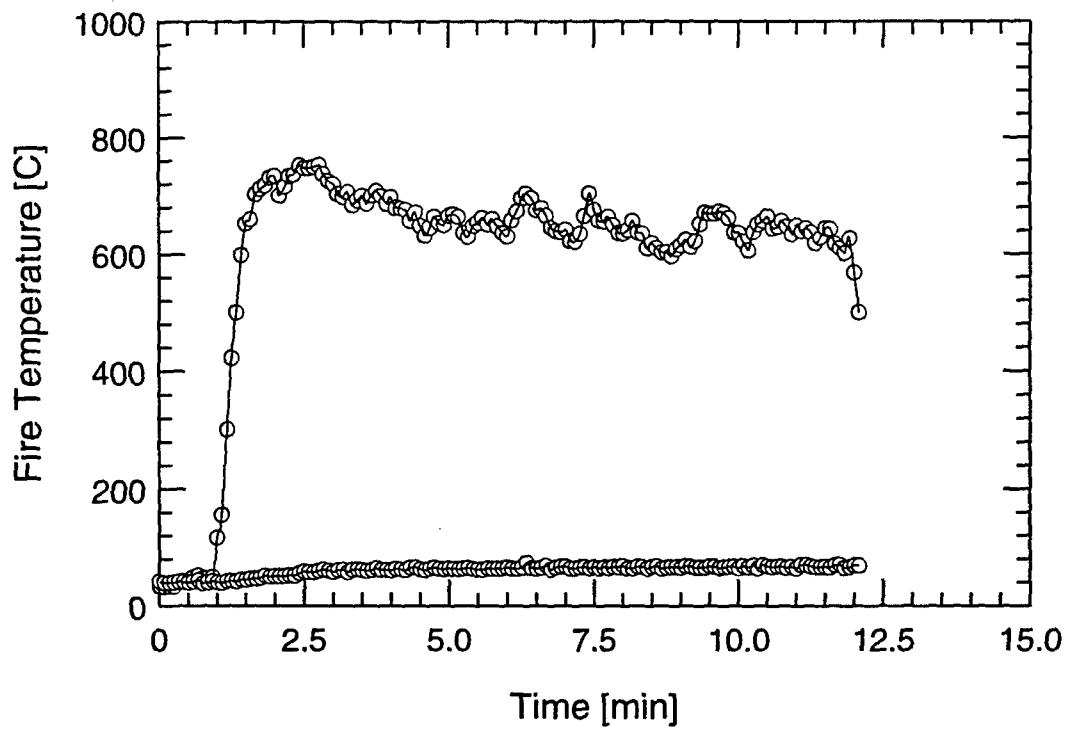
Water Mist System Flow Rate



Water Mist System Pressure

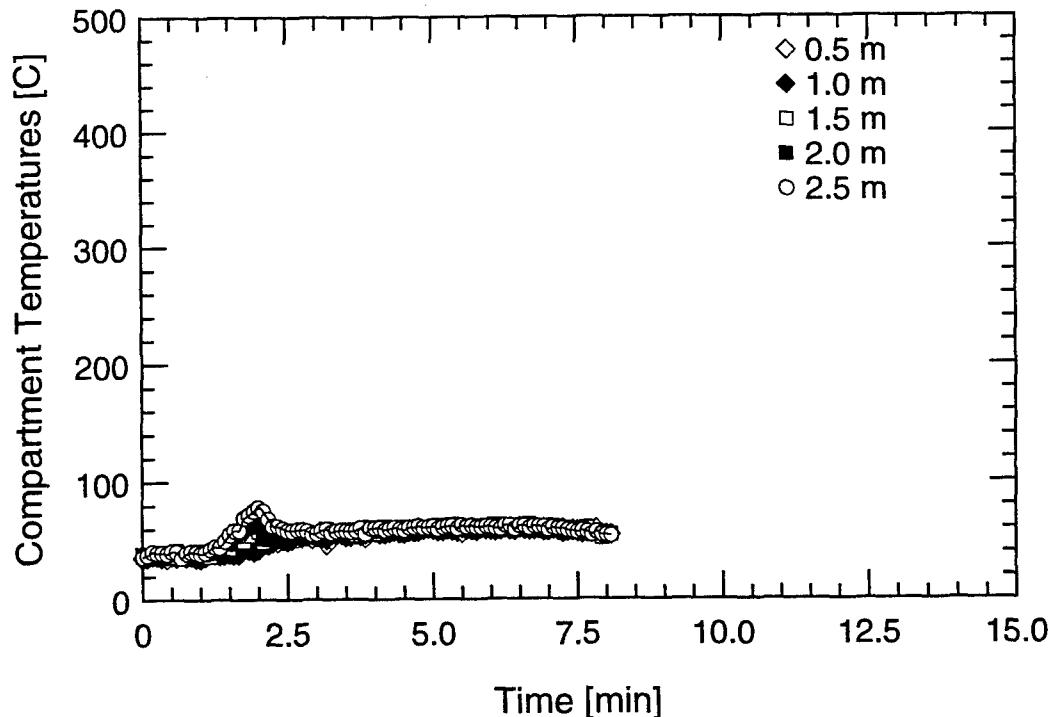
TEST #41

B-248

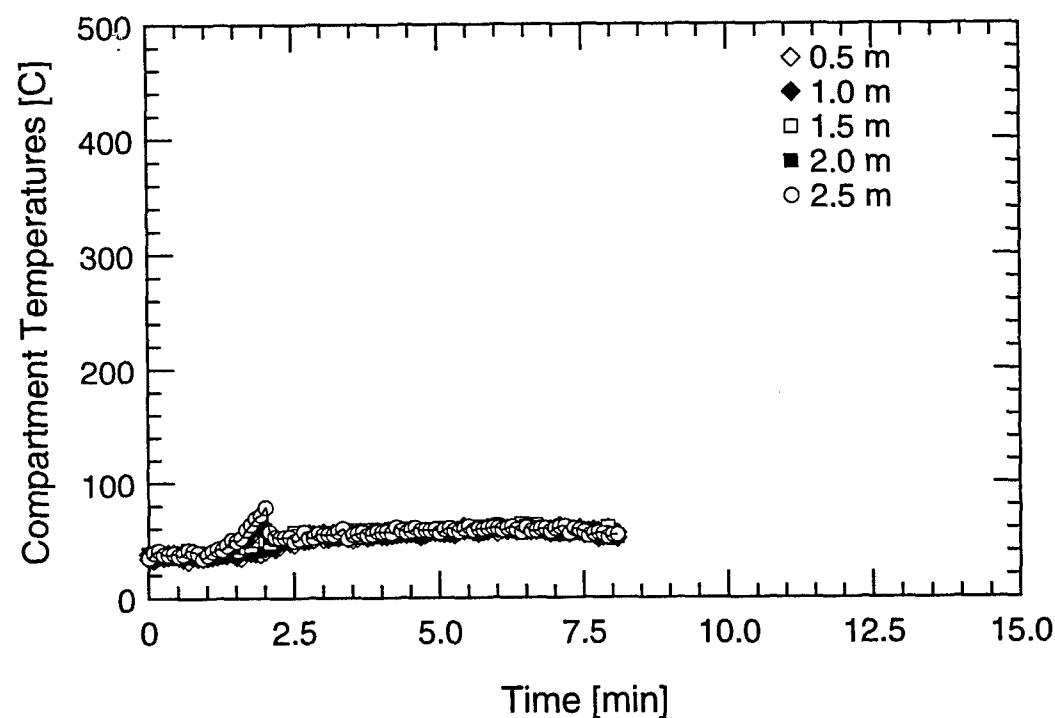


TEST #41

B-249



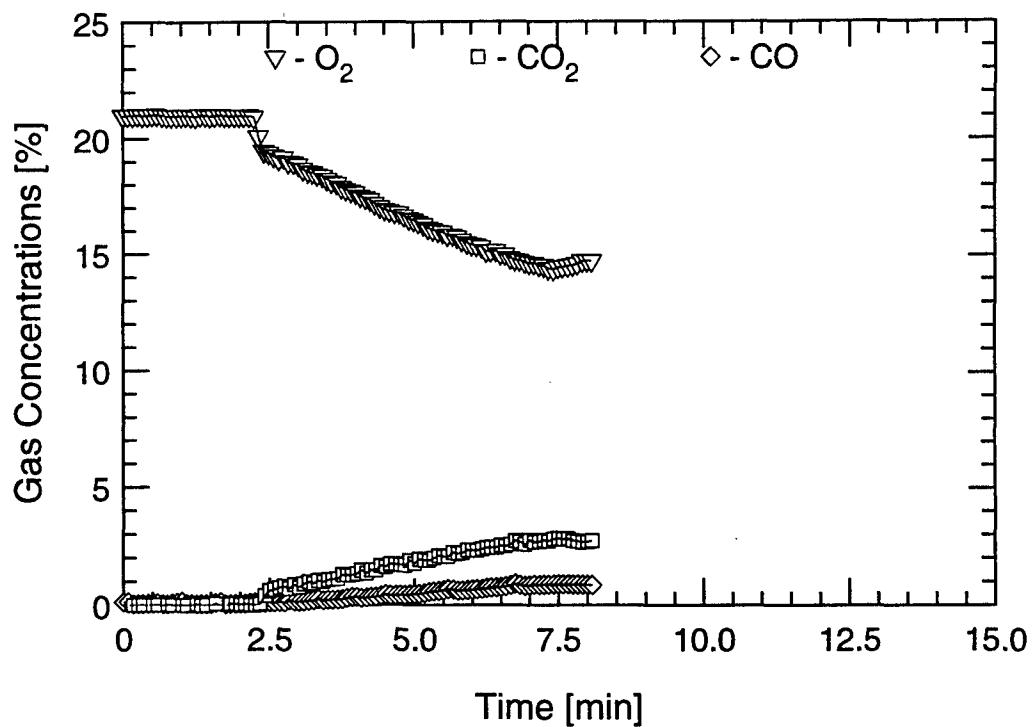
Aft Tree



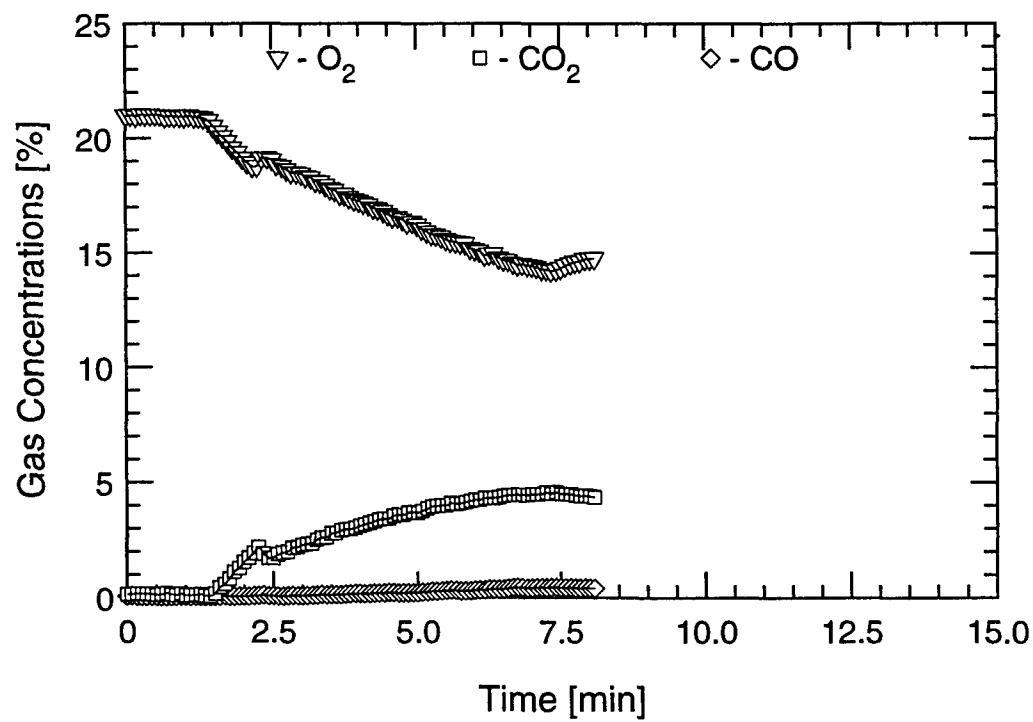
Forward Tree

TEST #42

B-250



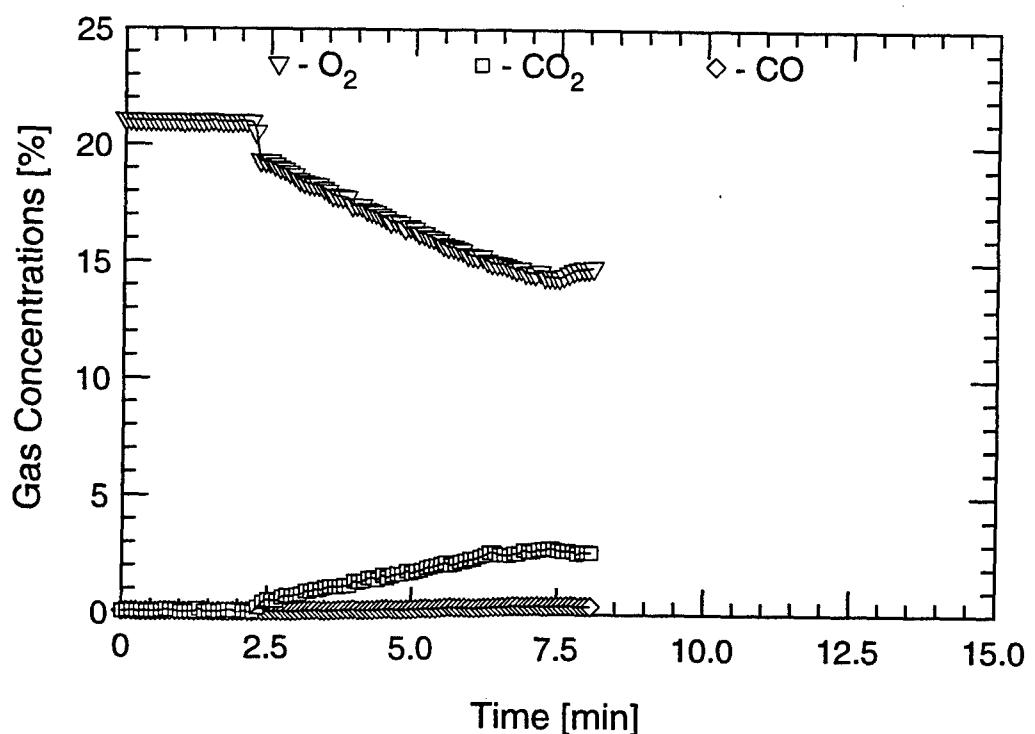
Aft Tree (Low)



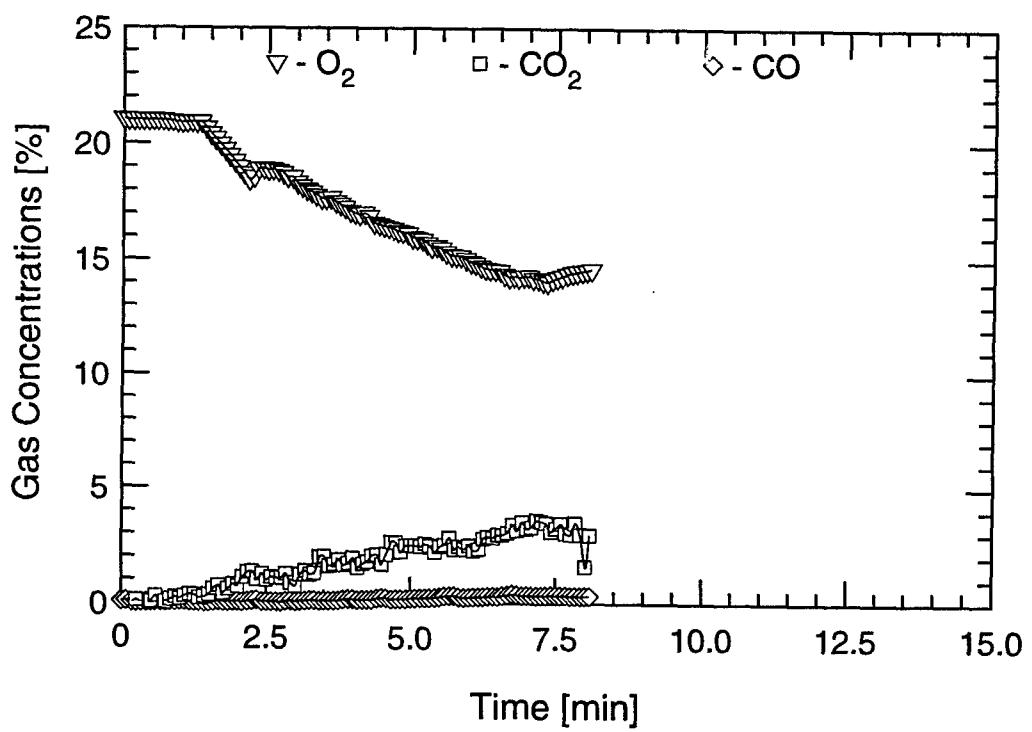
Aft Tree (High)

TEST #42

B-251



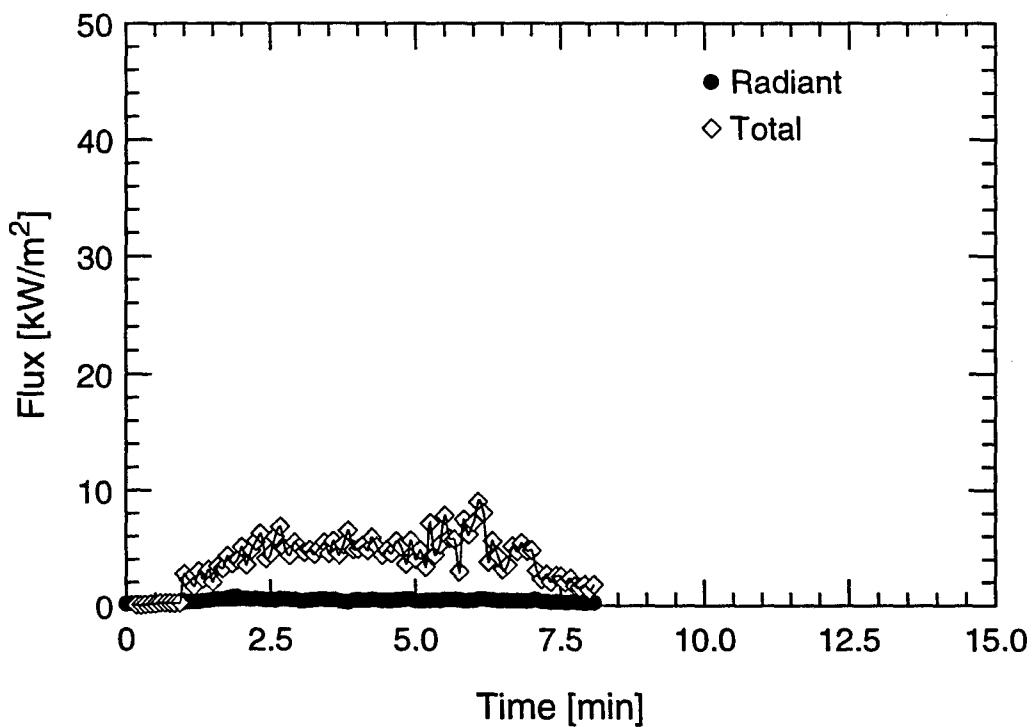
Forward Tree (Low)



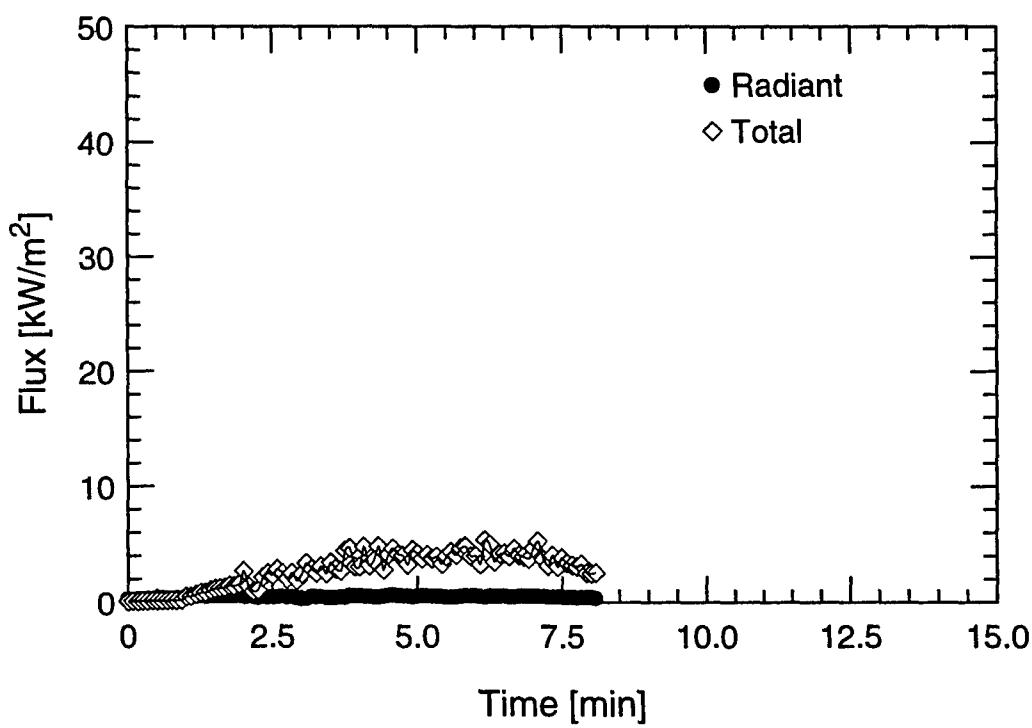
Forward Tree (High)

TEST #42

B-252



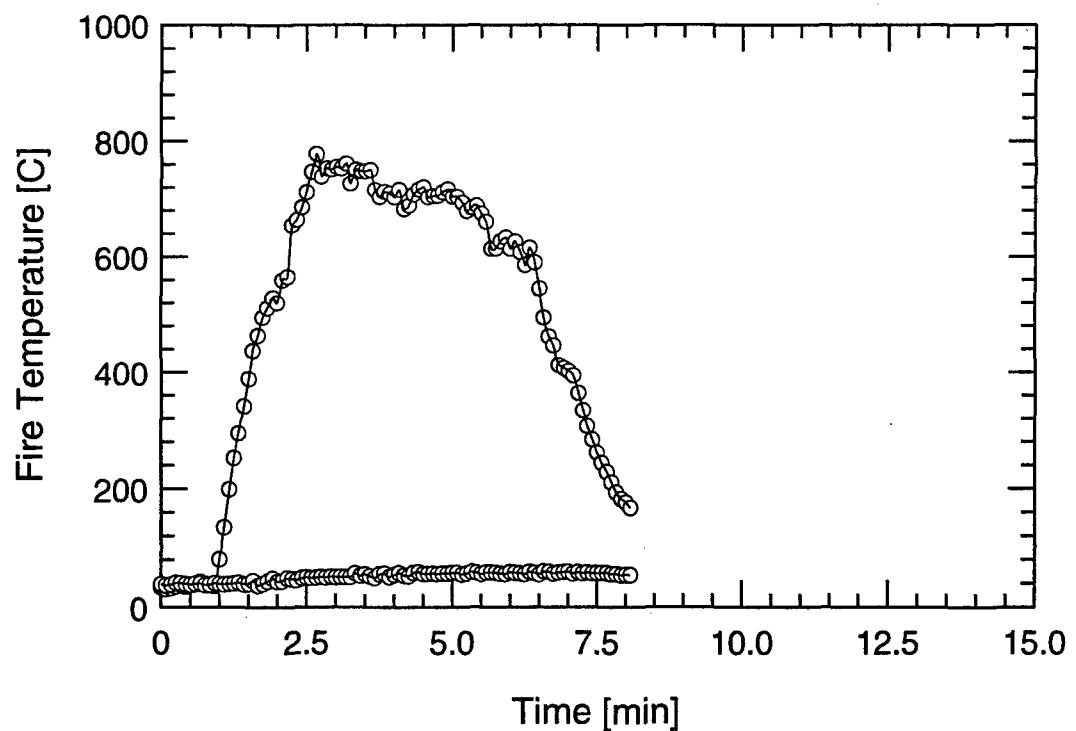
Overhead



Forward Bulkhead

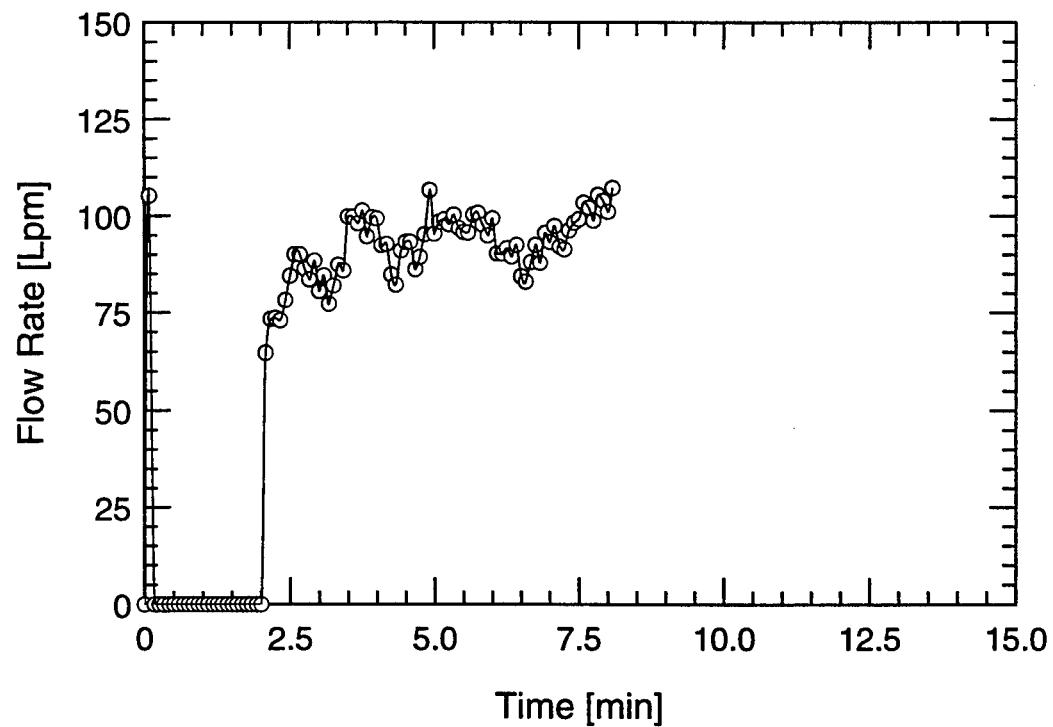
TEST #42

B-253

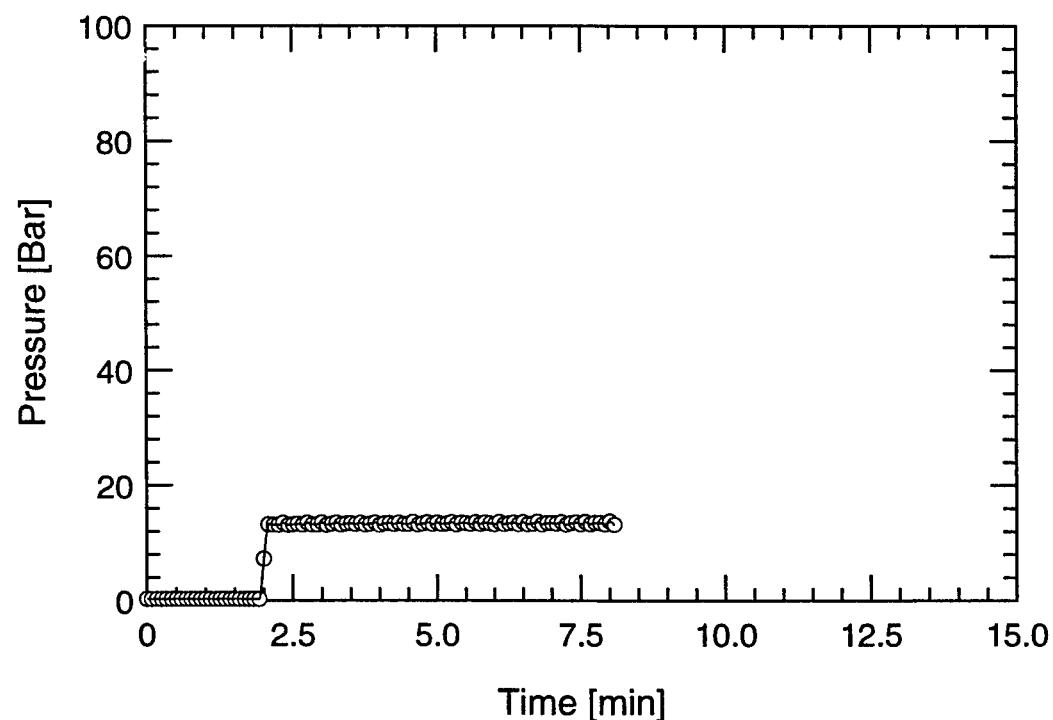


TEST #42

B-254



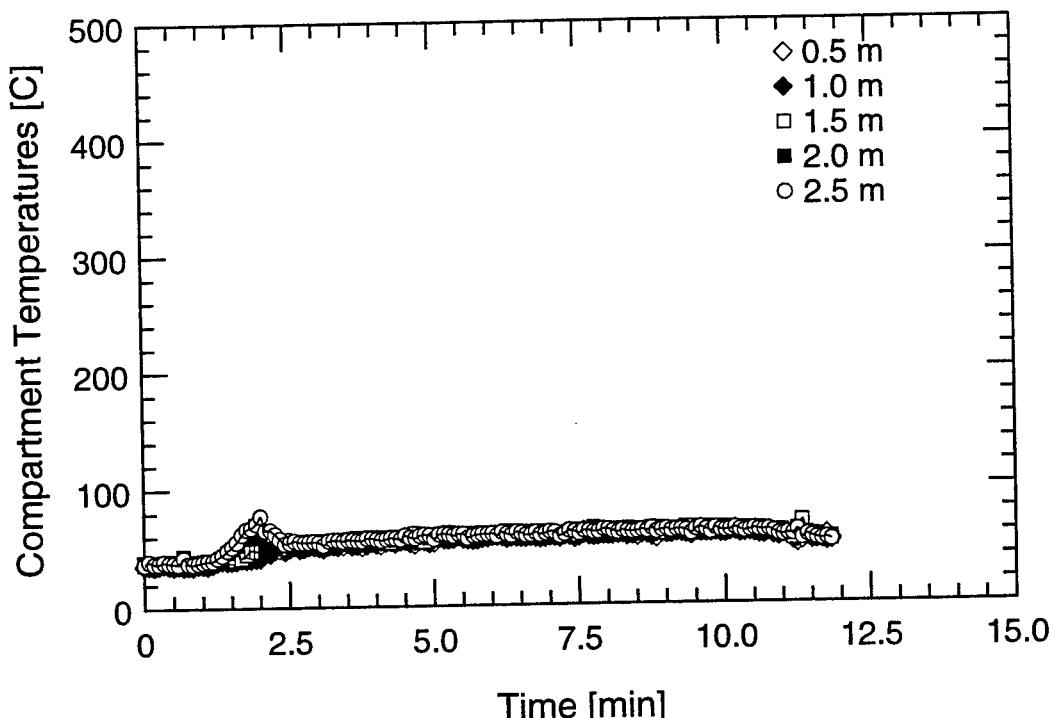
Water Mist System Flow Rate



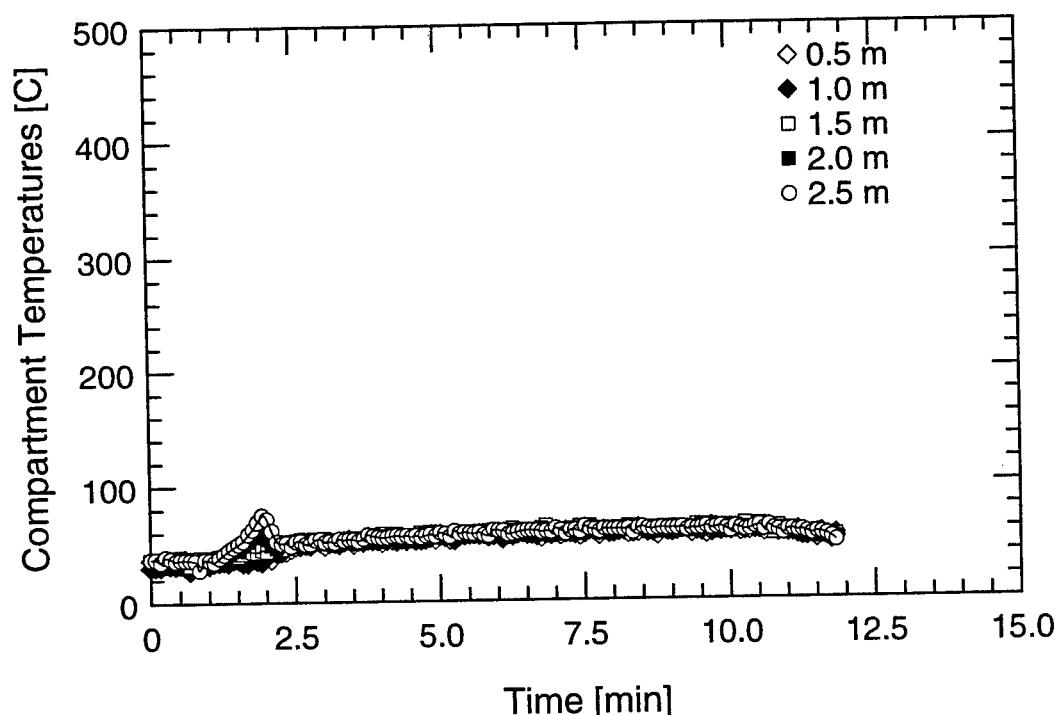
Water Mist System Pressure

TEST #42

B-255

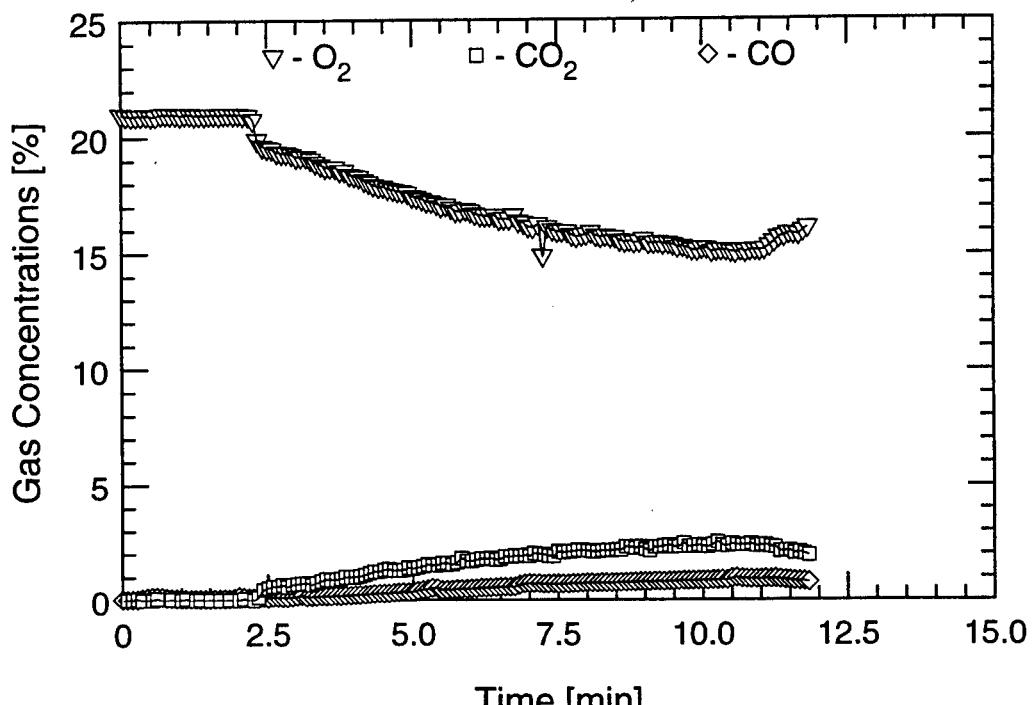


Aft Tree

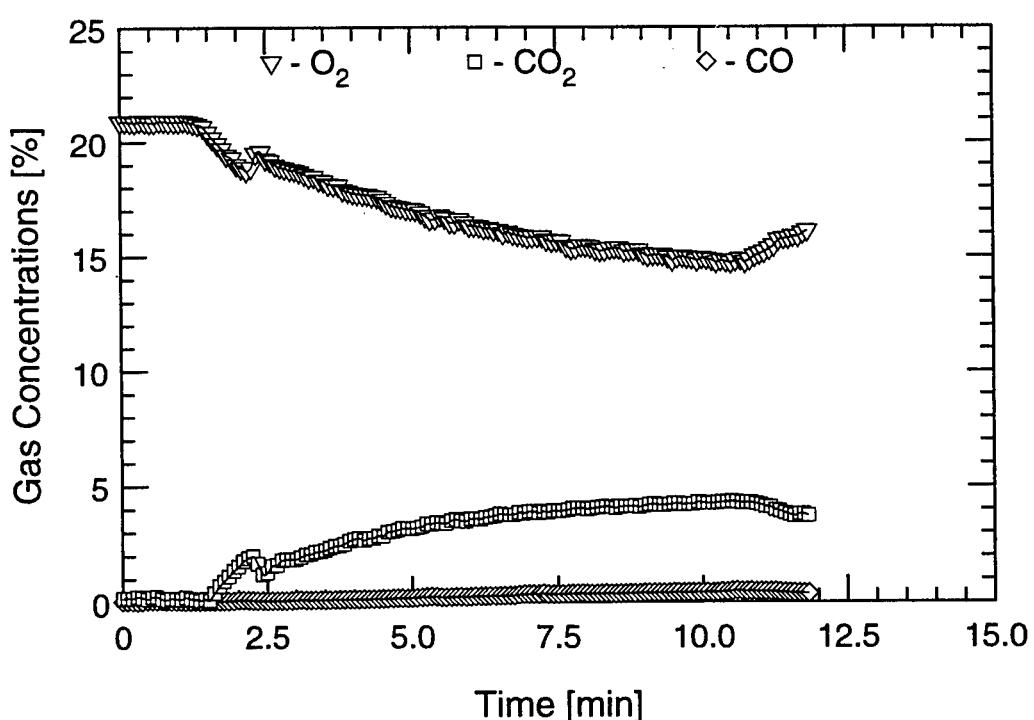


Forward Tree

TEST #43

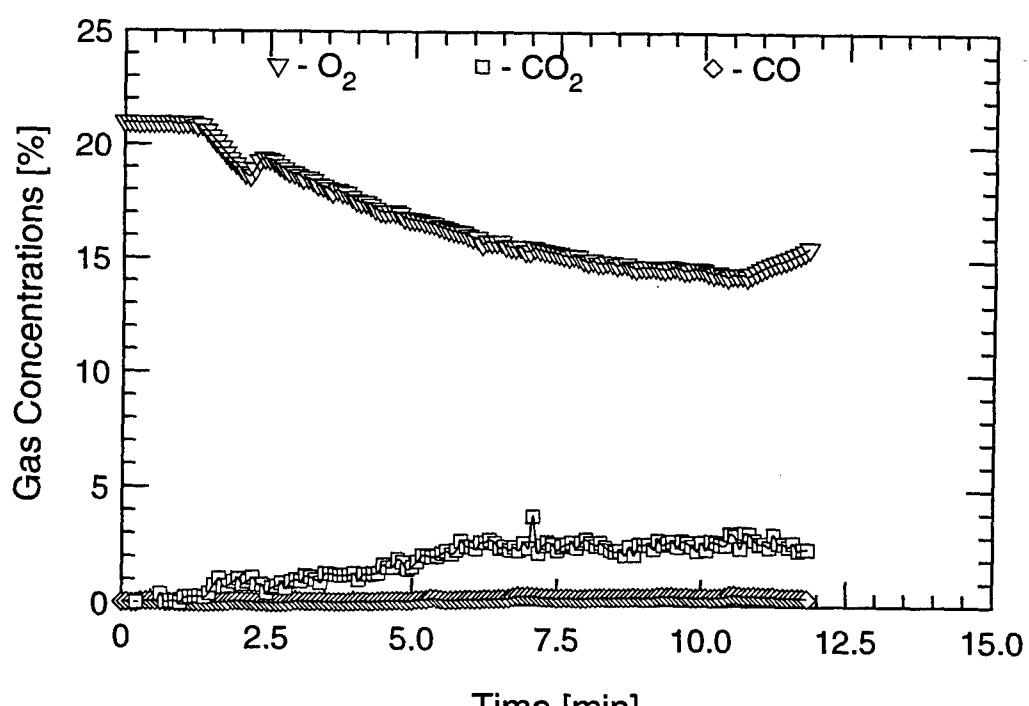
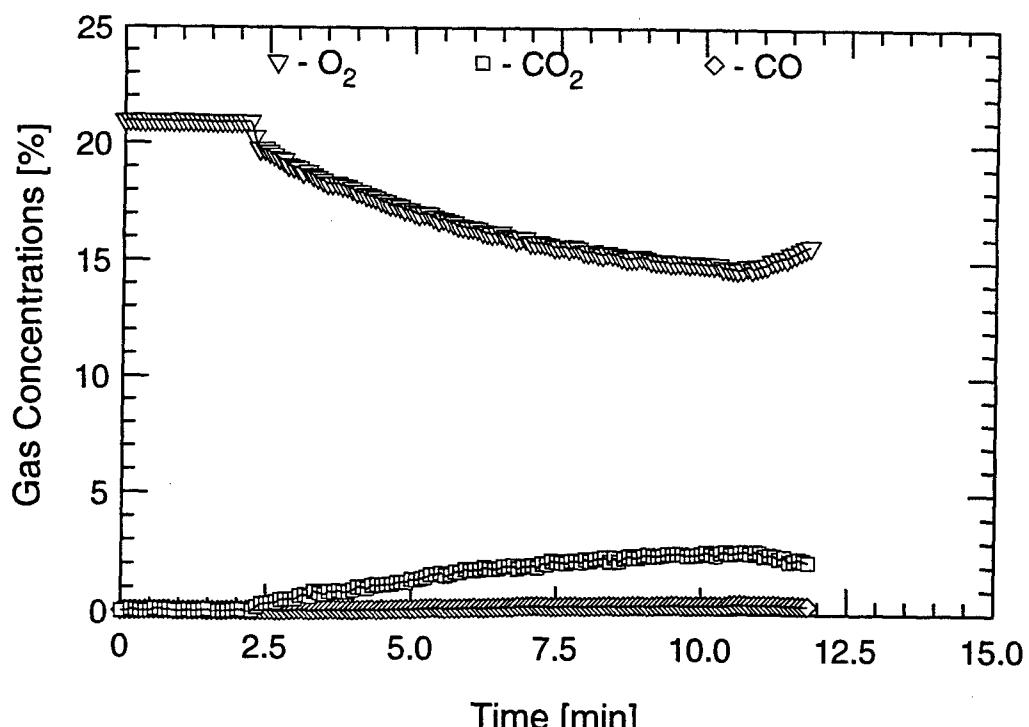


Aft Tree (Low)

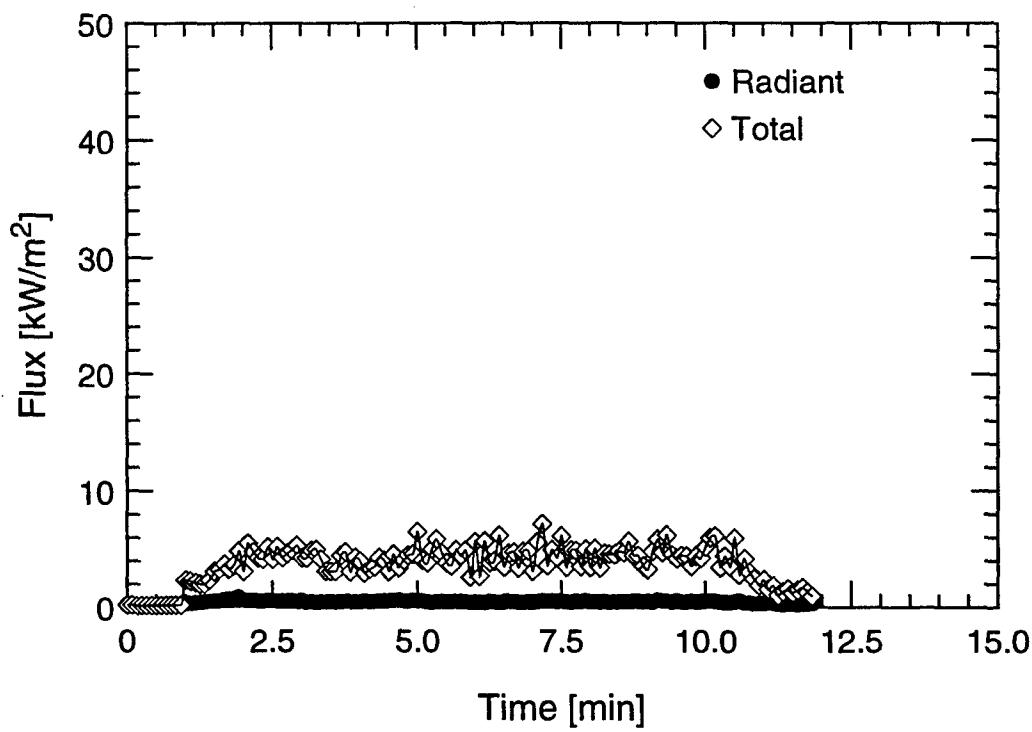


Aft Tree (High)

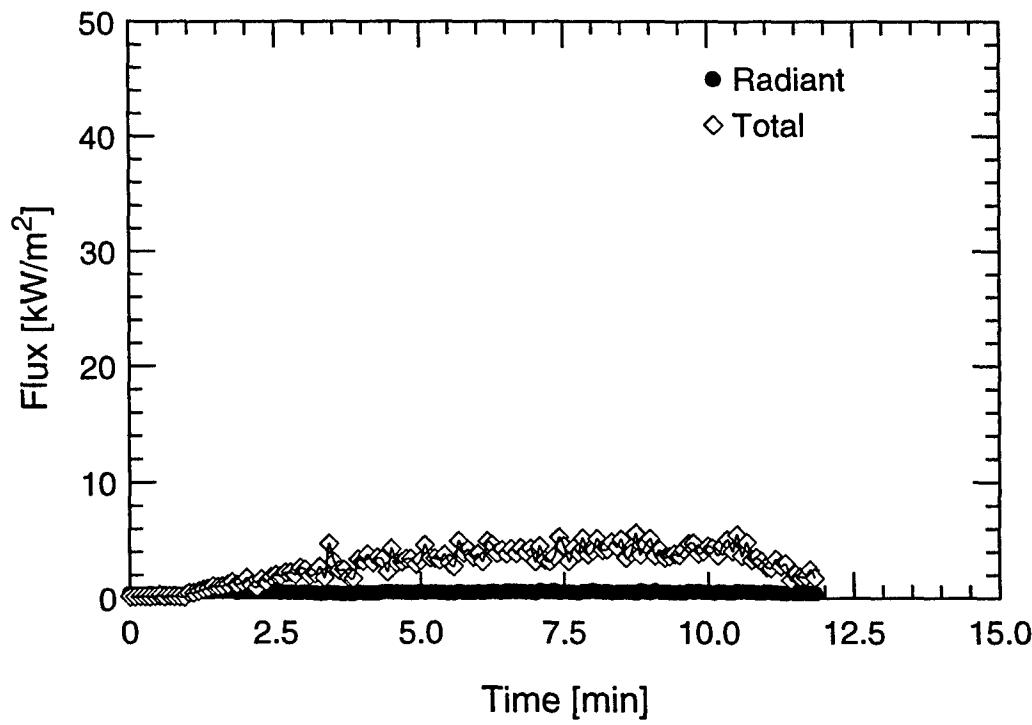
TEST #43



TEST #43



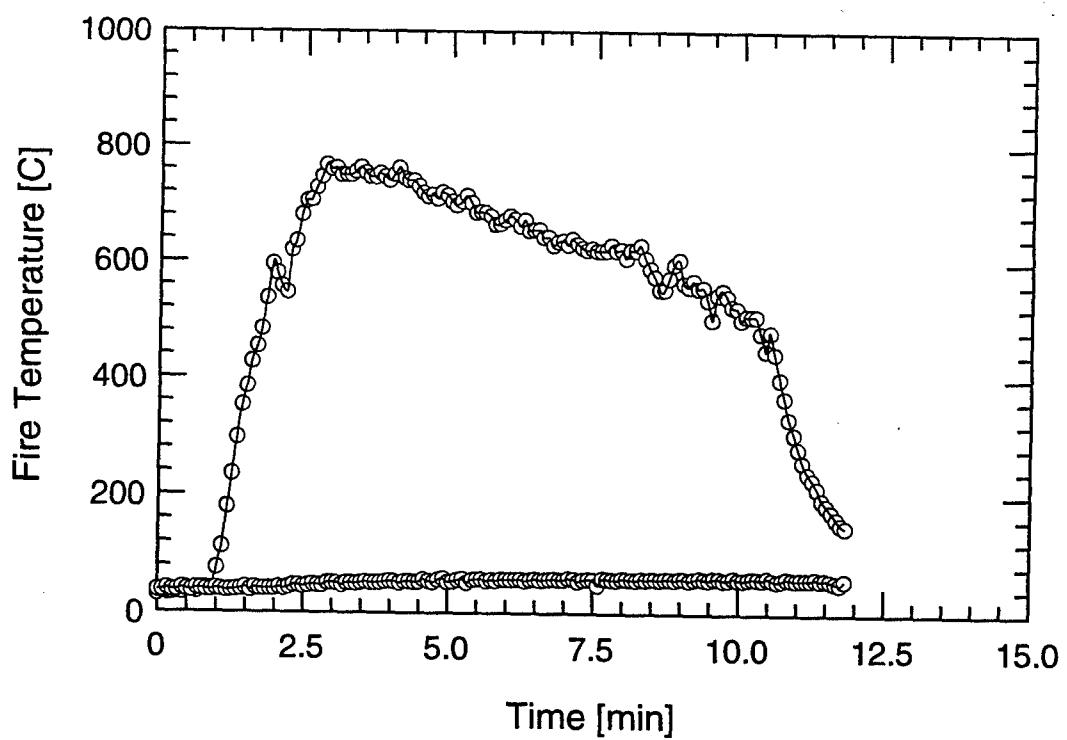
Overhead



Forward Bulkhead

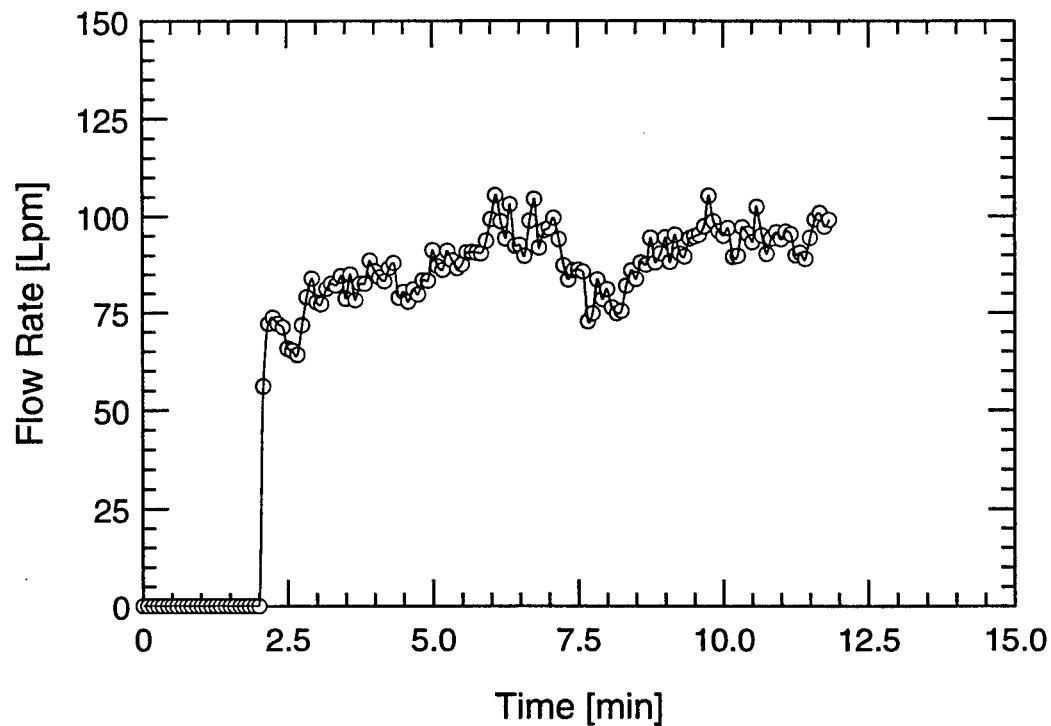
TEST #43

B-259

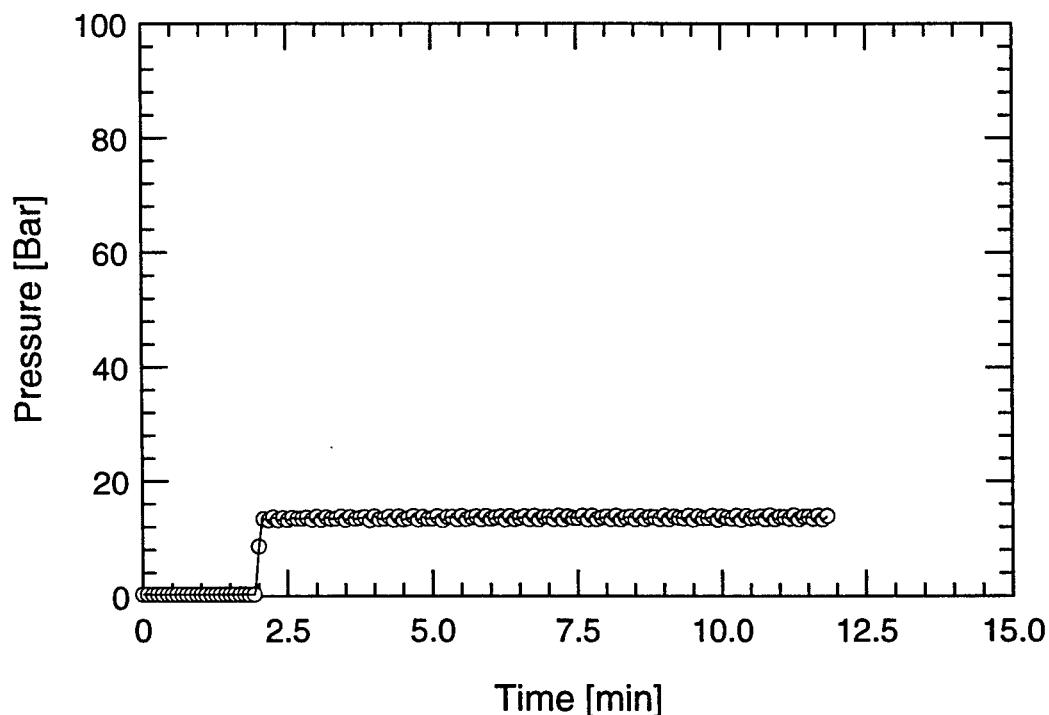


TEST #43

B-260

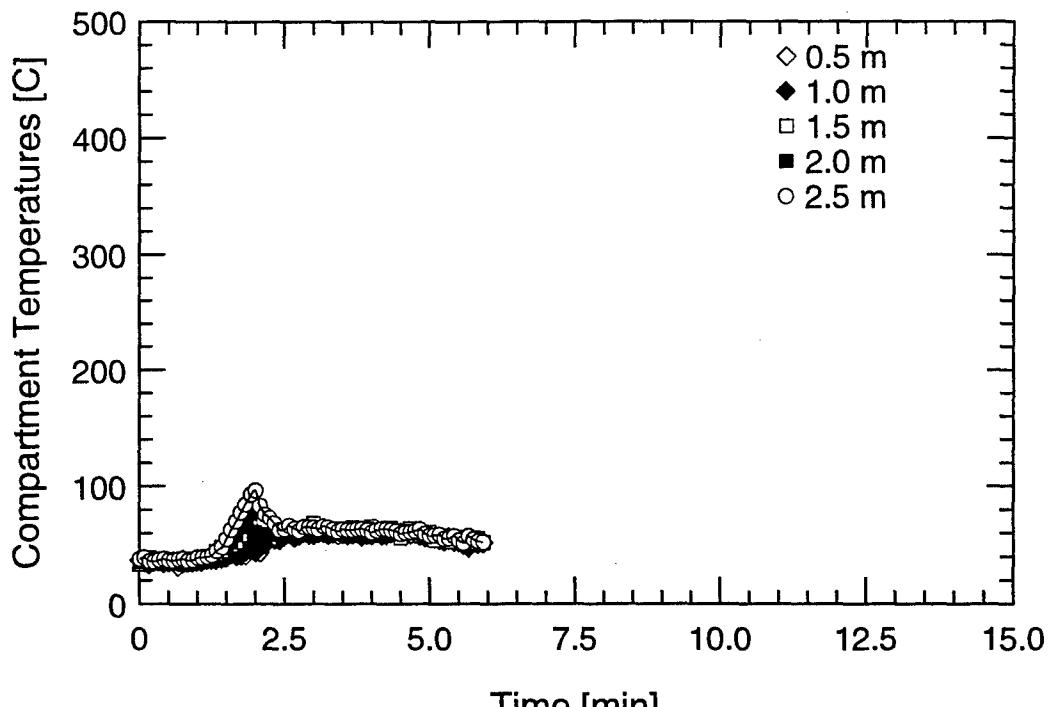


Water Mist System Flow Rate

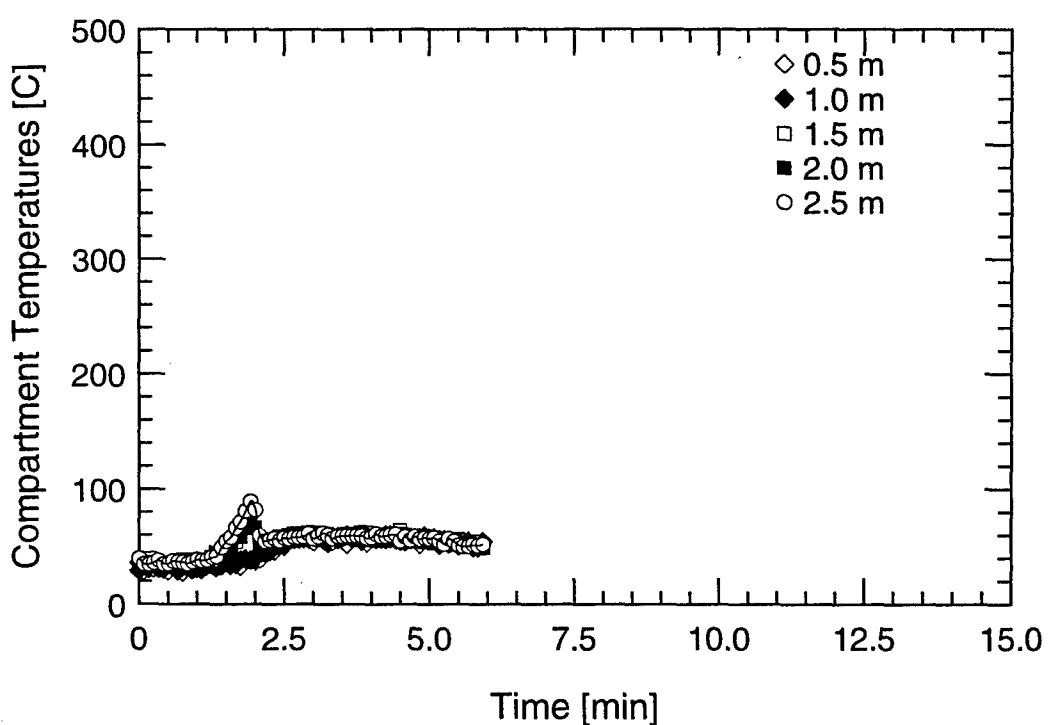


Water Mist System Pressure

TEST #43



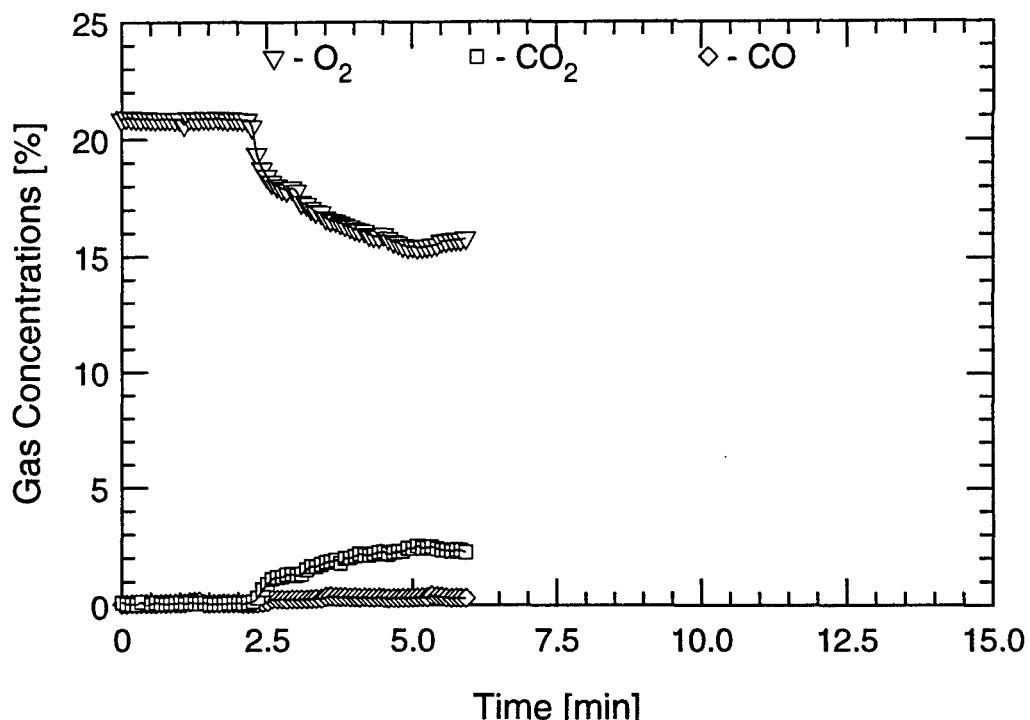
Aft Tree



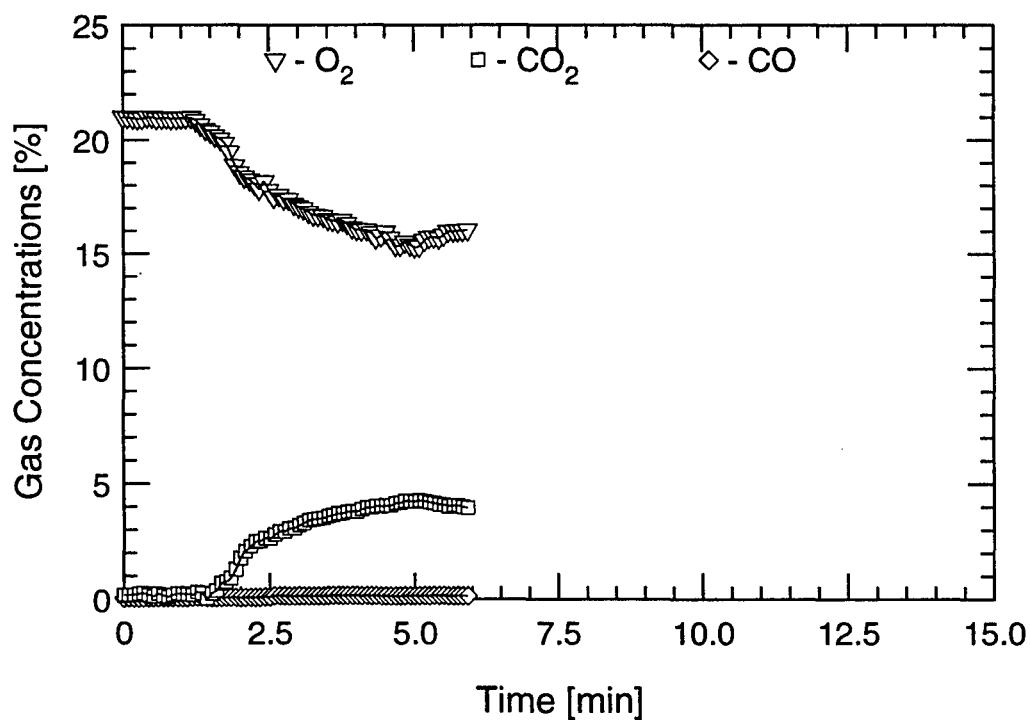
Forward Tree

TEST #44

B-262



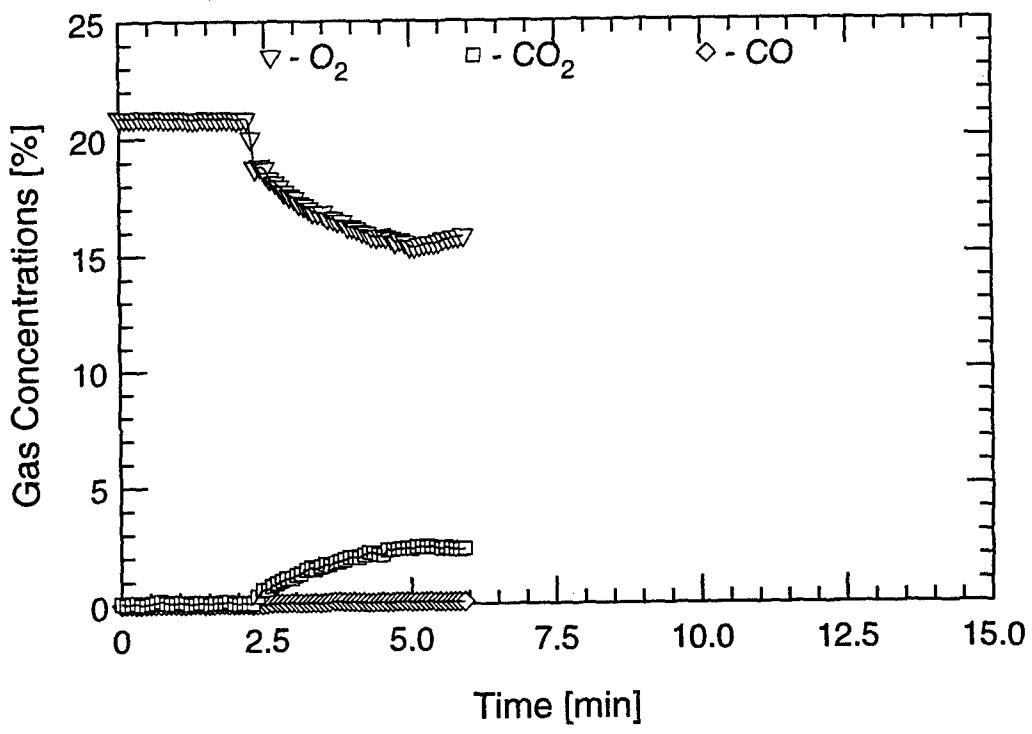
Aft Tree (Low)



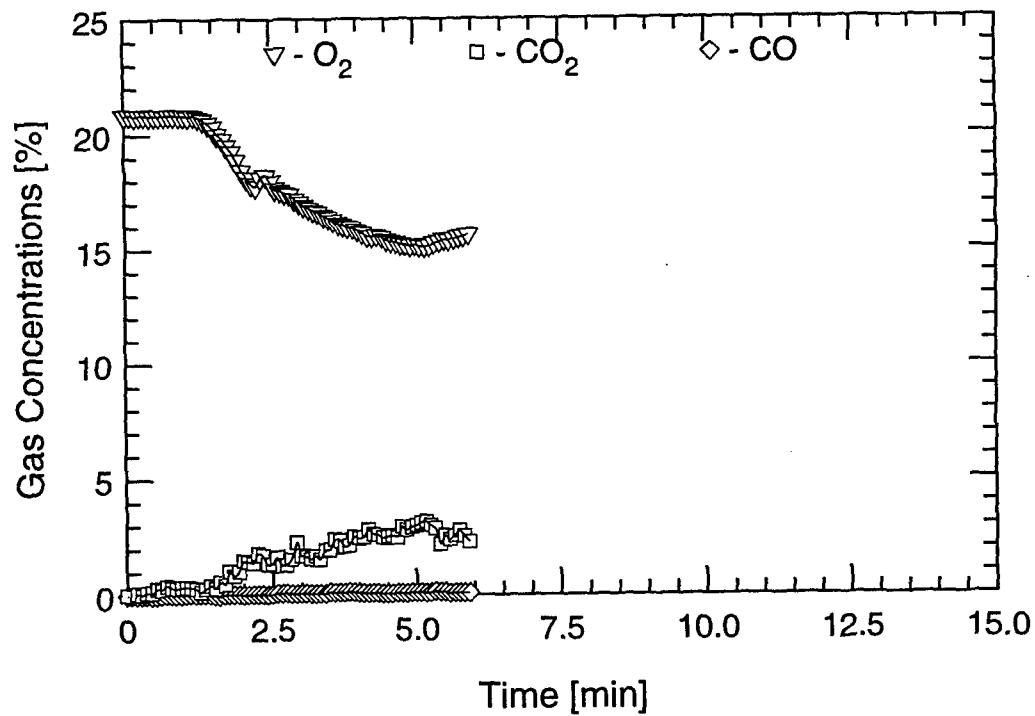
Aft Tree (High)

TEST #44

B-263



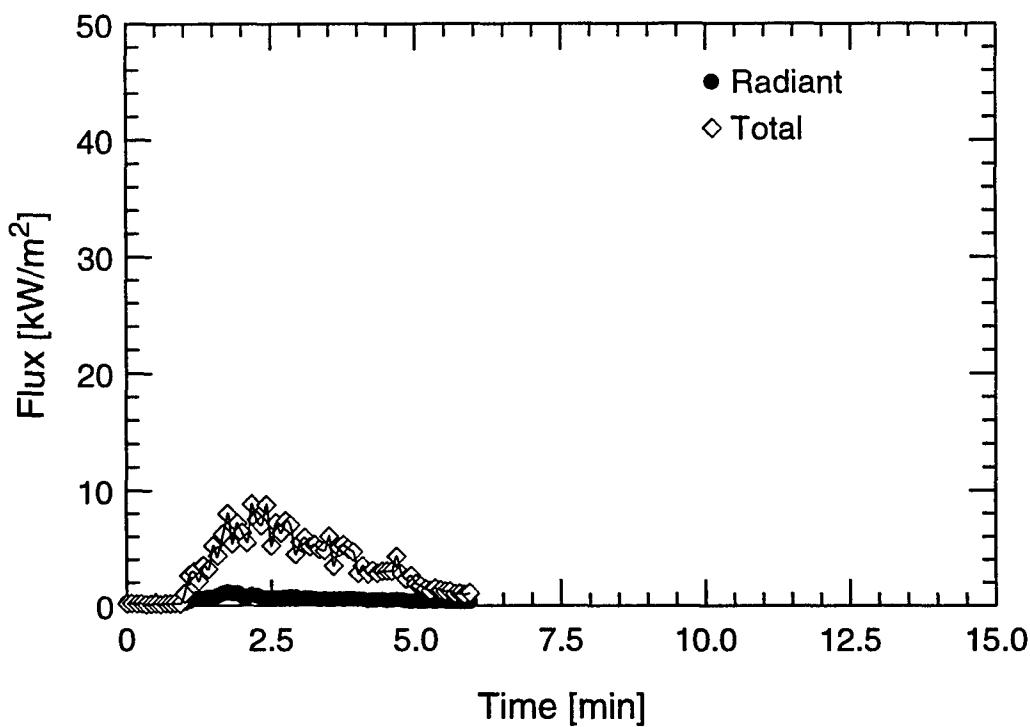
Forward Tree (Low)



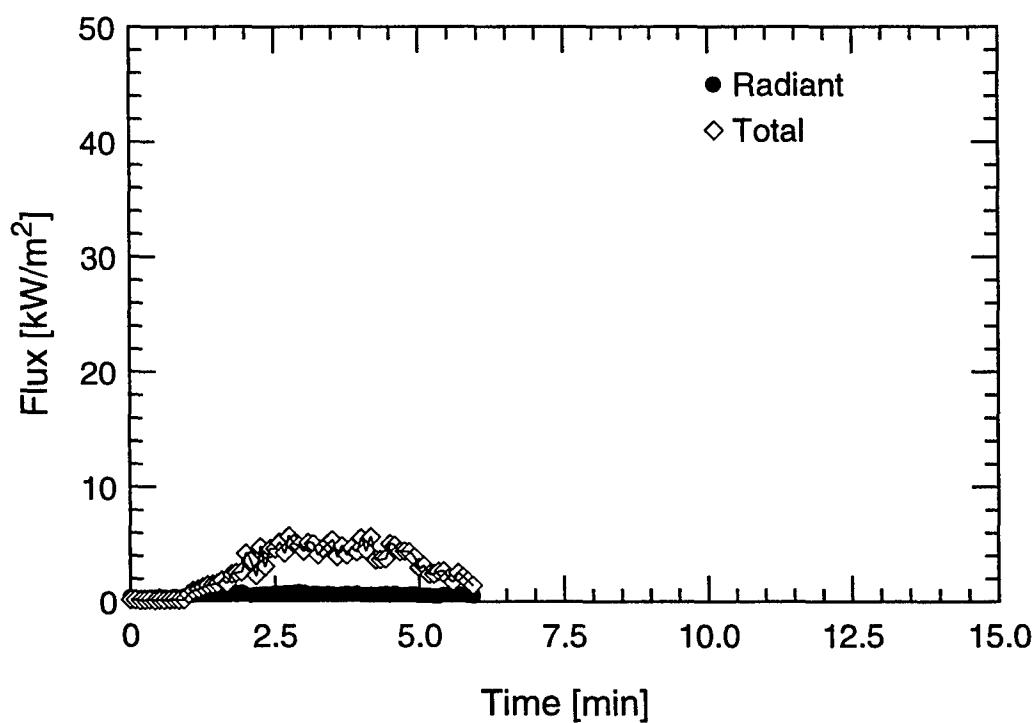
Forward Tree (High)

TEST #44

B-264



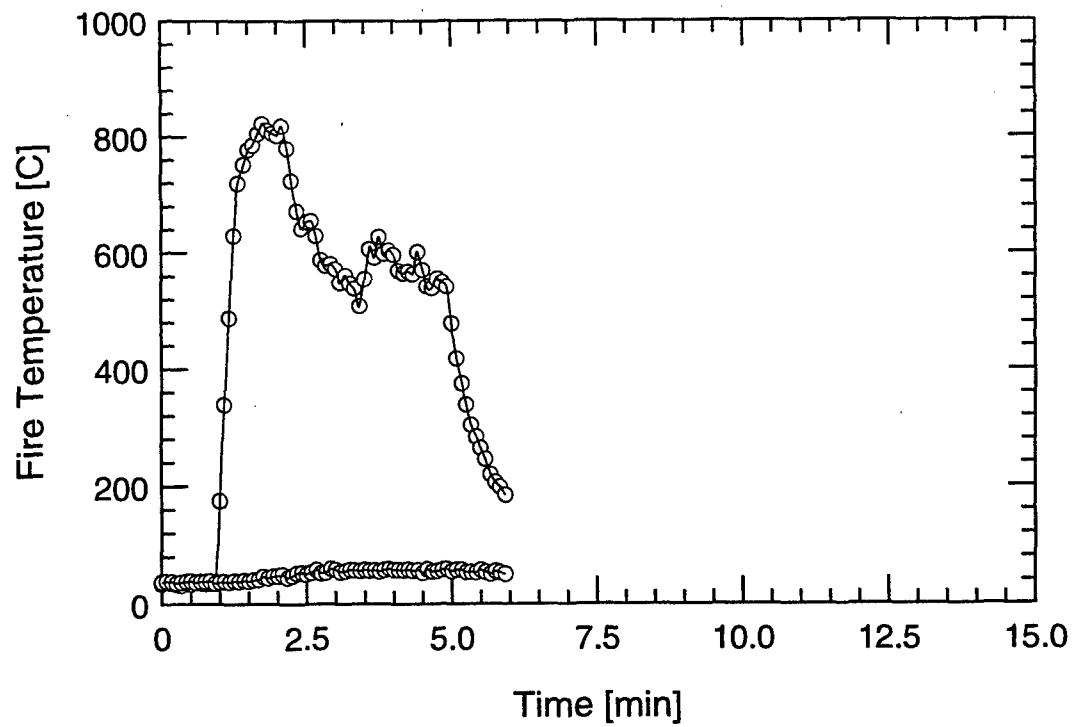
Overhead



Forward Bulkhead

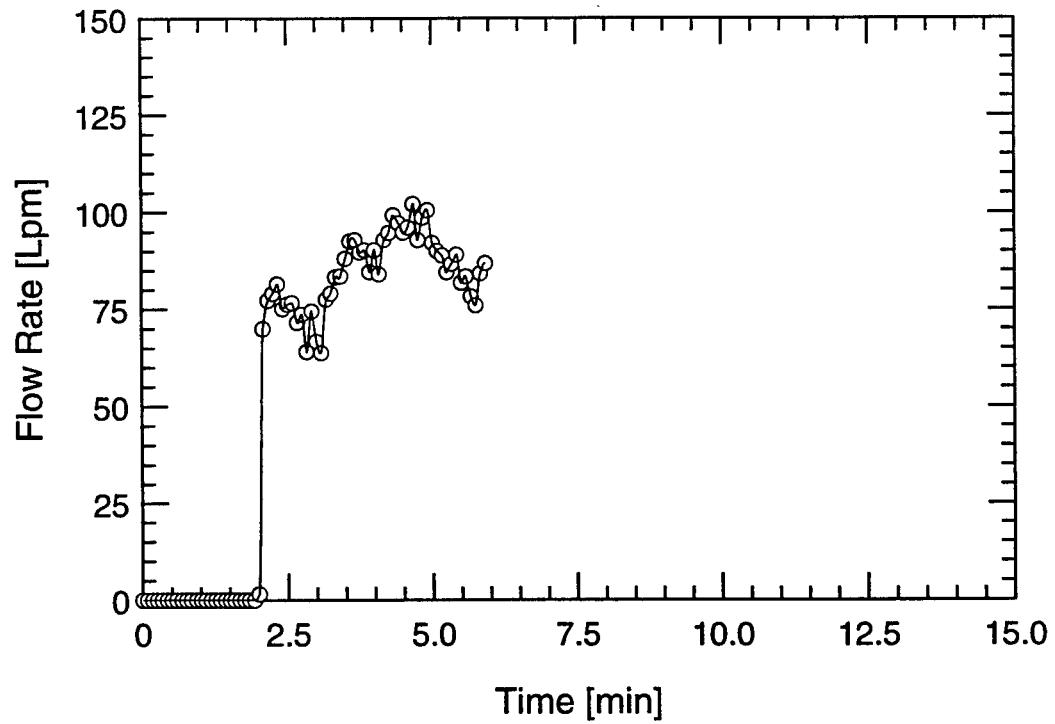
TEST #44

B-265

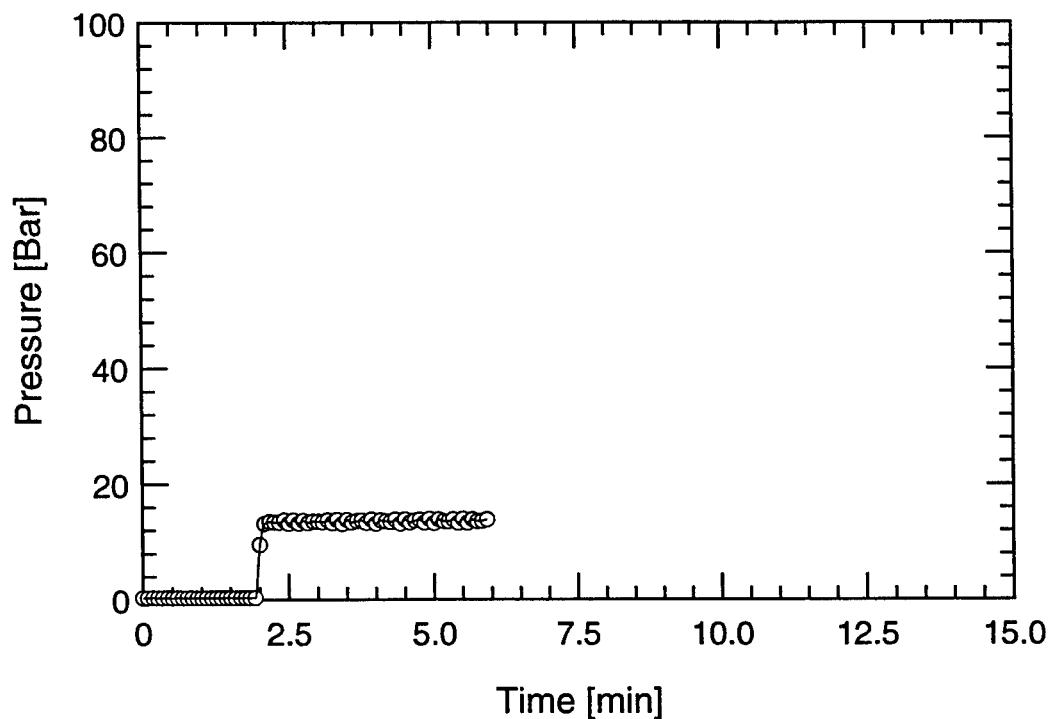


TEST #44

B-266



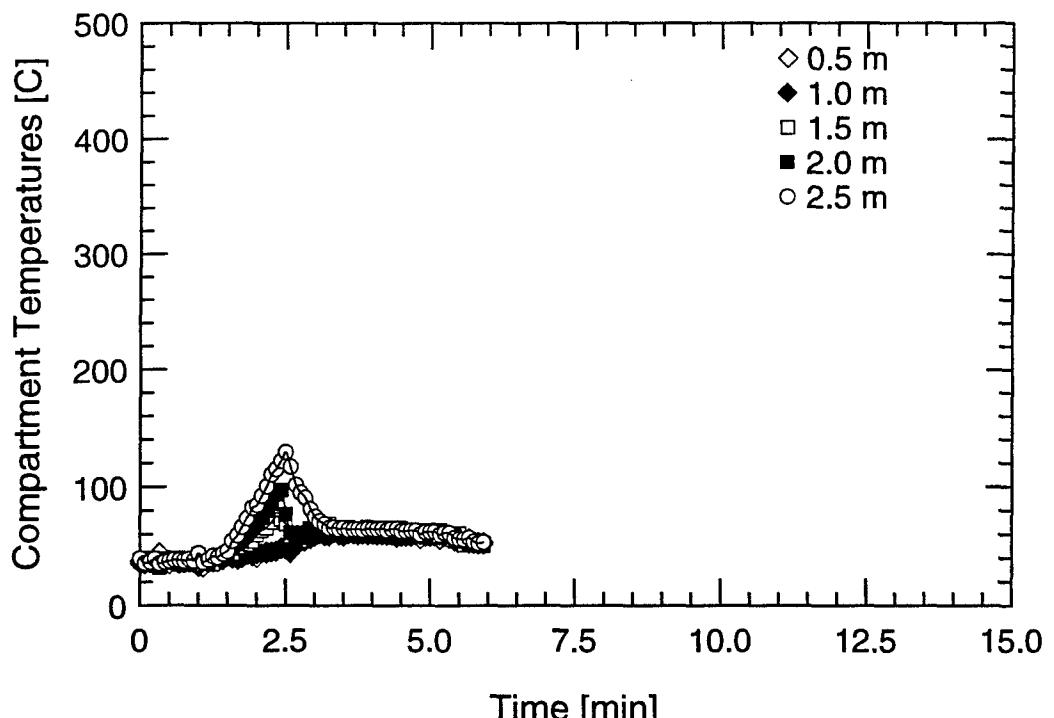
Water Mist System Flow Rate



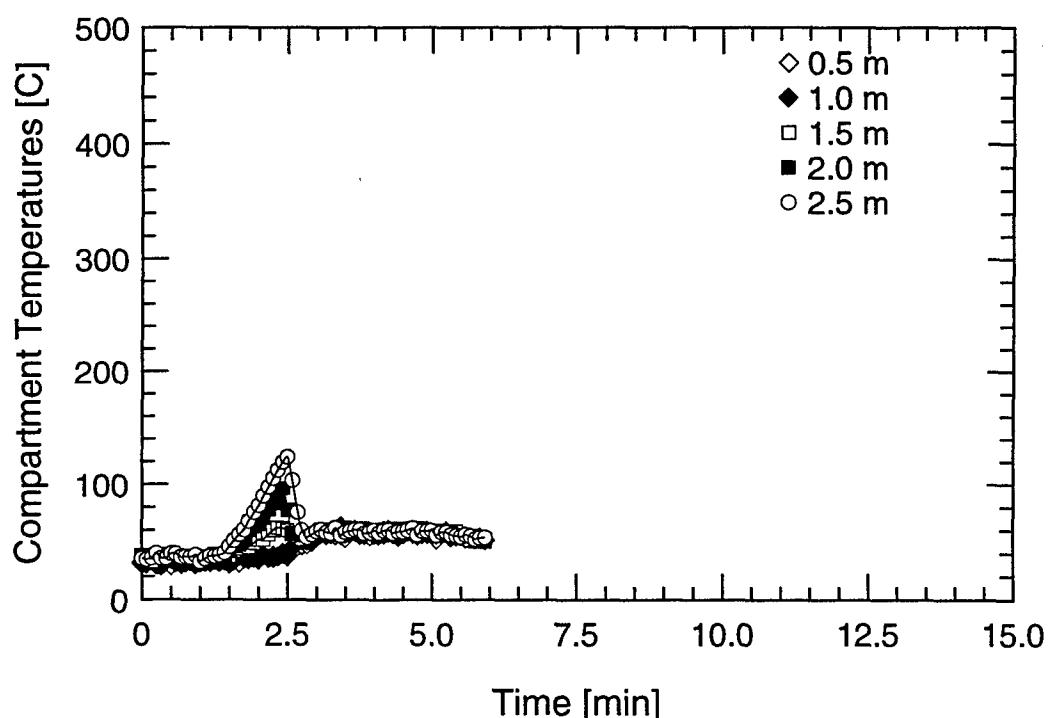
Water Mist System Pressure

TEST #44

B-267



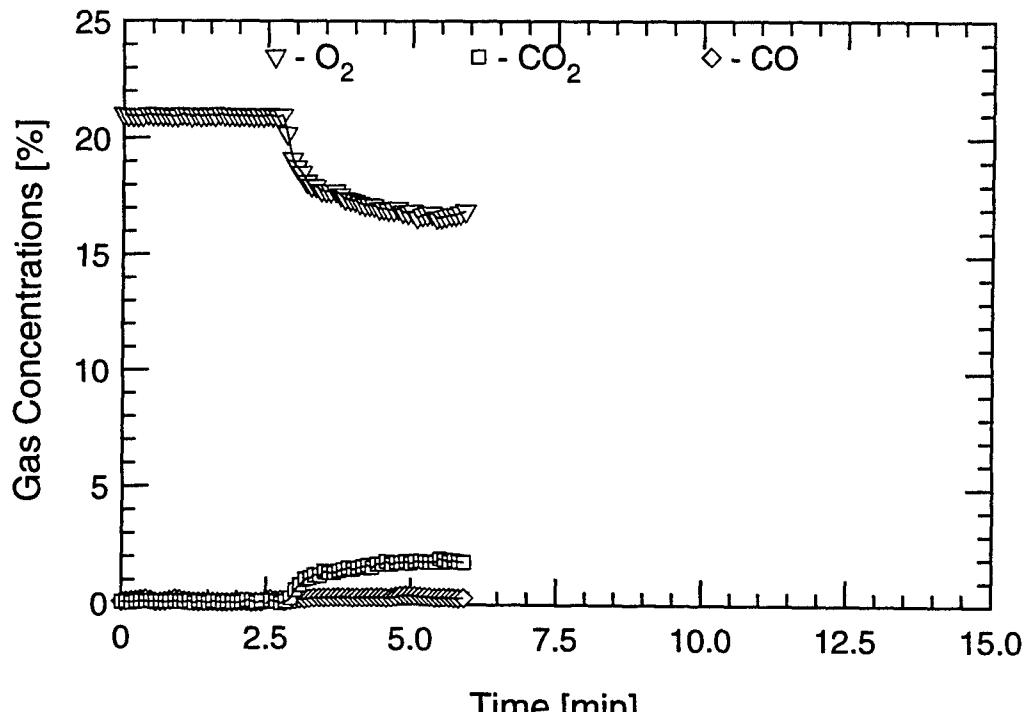
Aft Tree



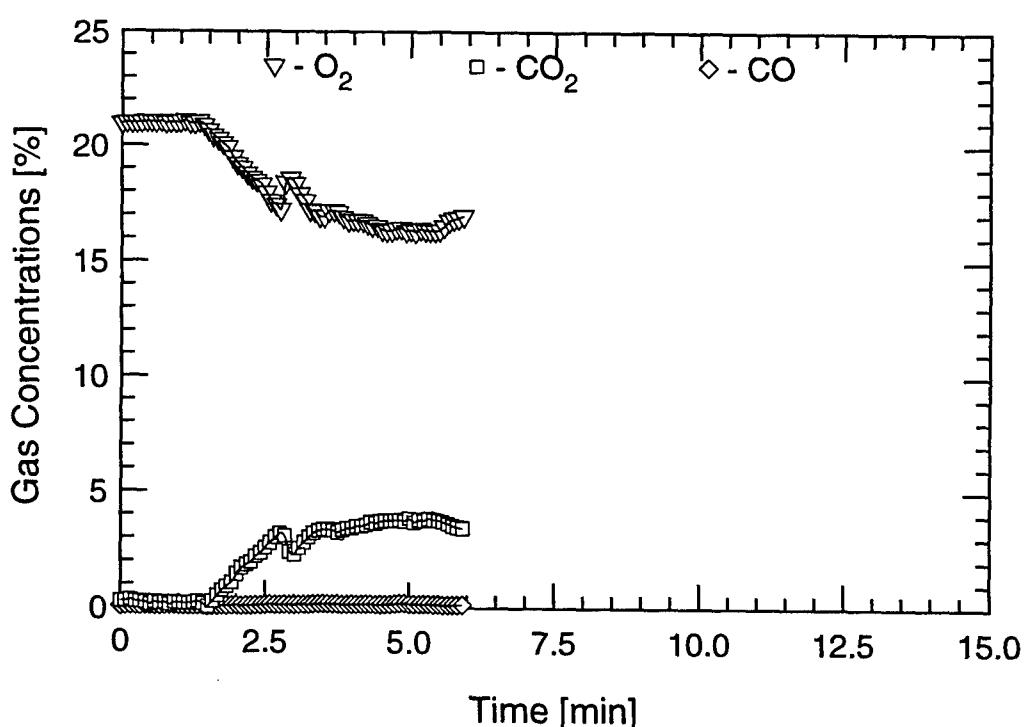
Forward Tree

TEST #45

B-268



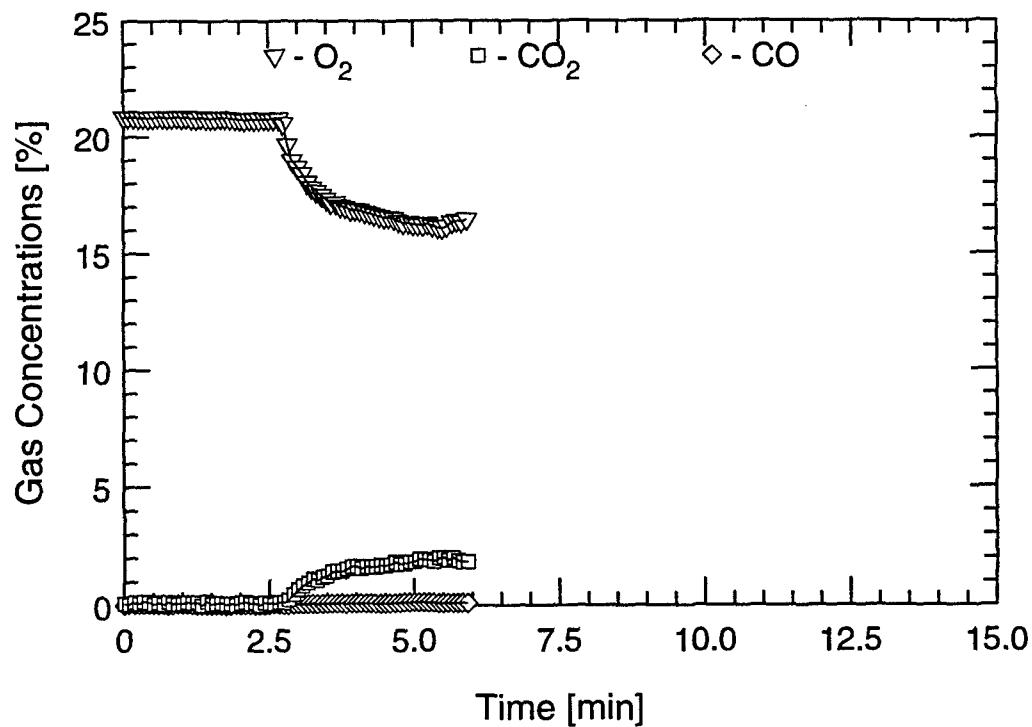
Aft Tree (Low)



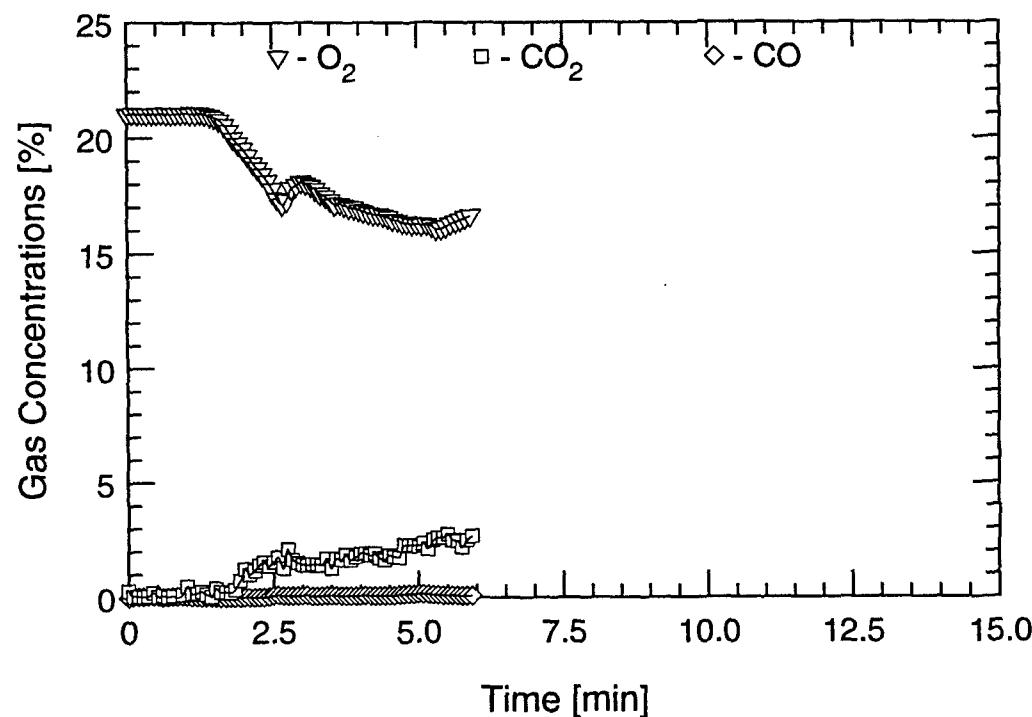
Aft Tree (High)

TEST #45

B-269



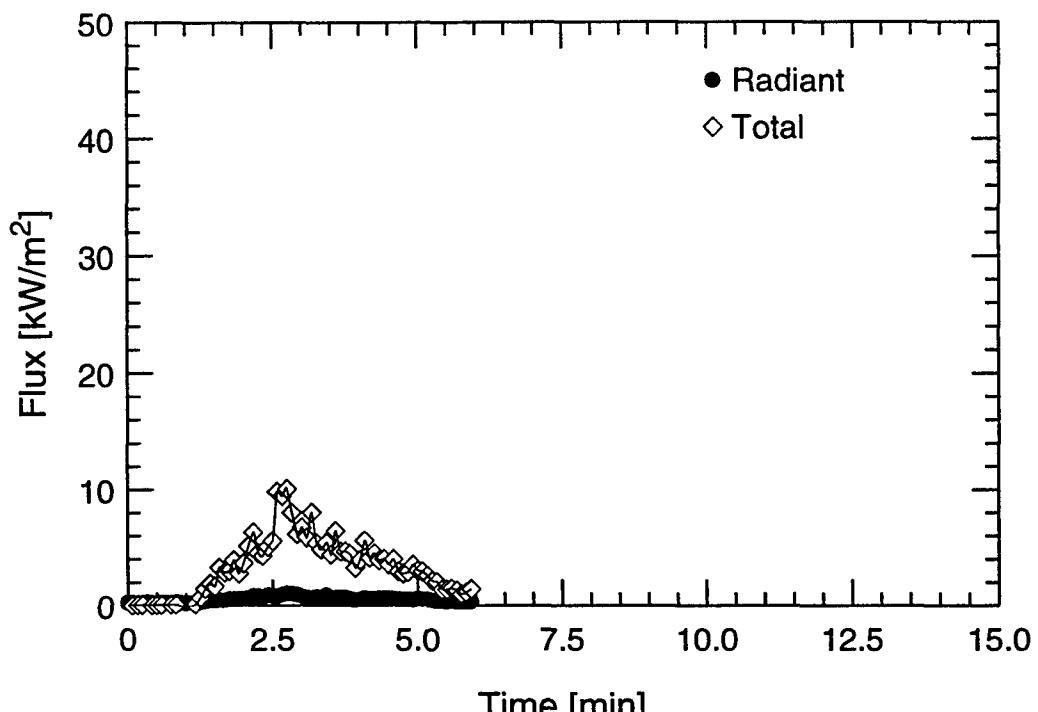
Forward Tree (Low)



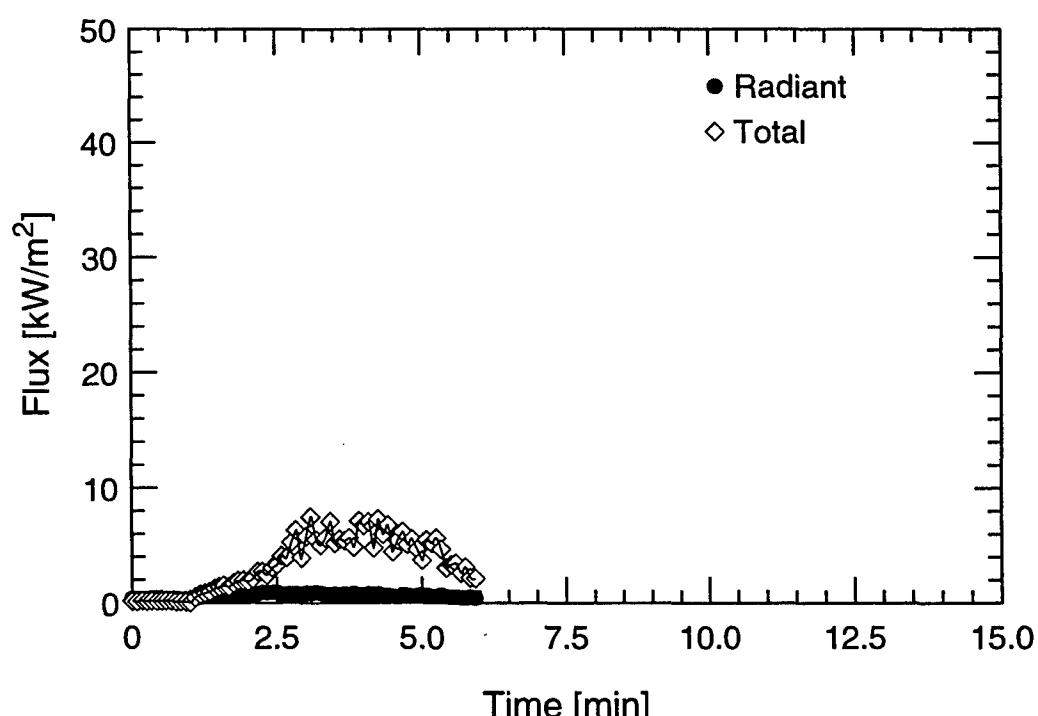
Forward Tree (High)

TEST #45

B-270

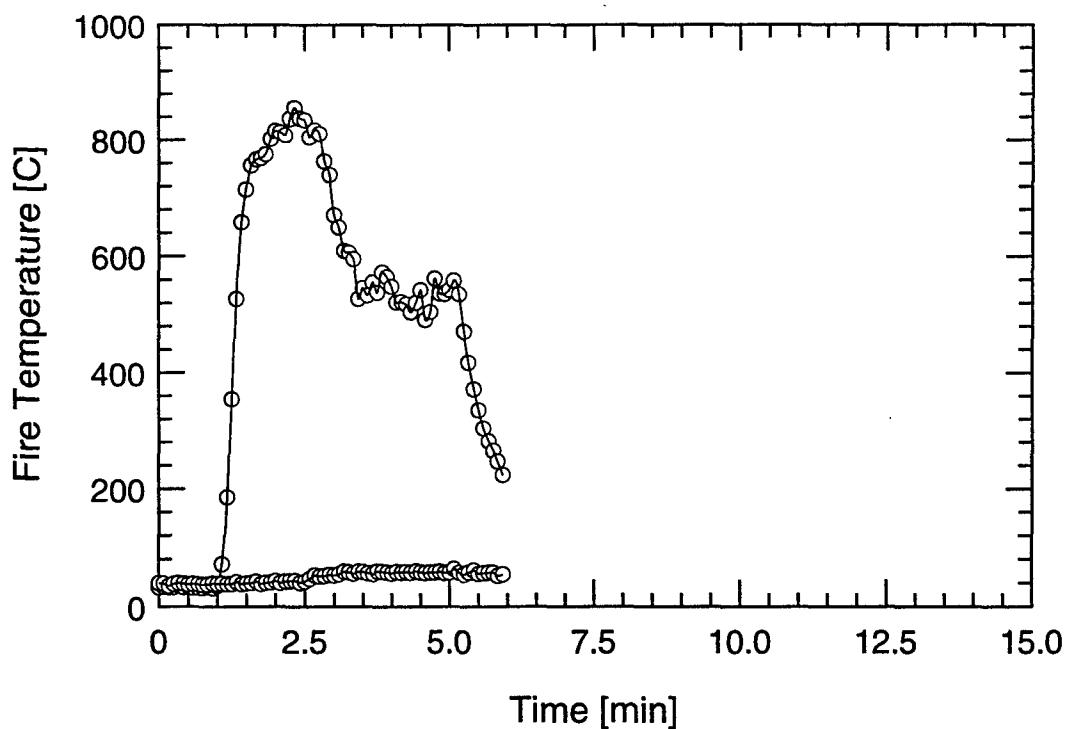


Overhead



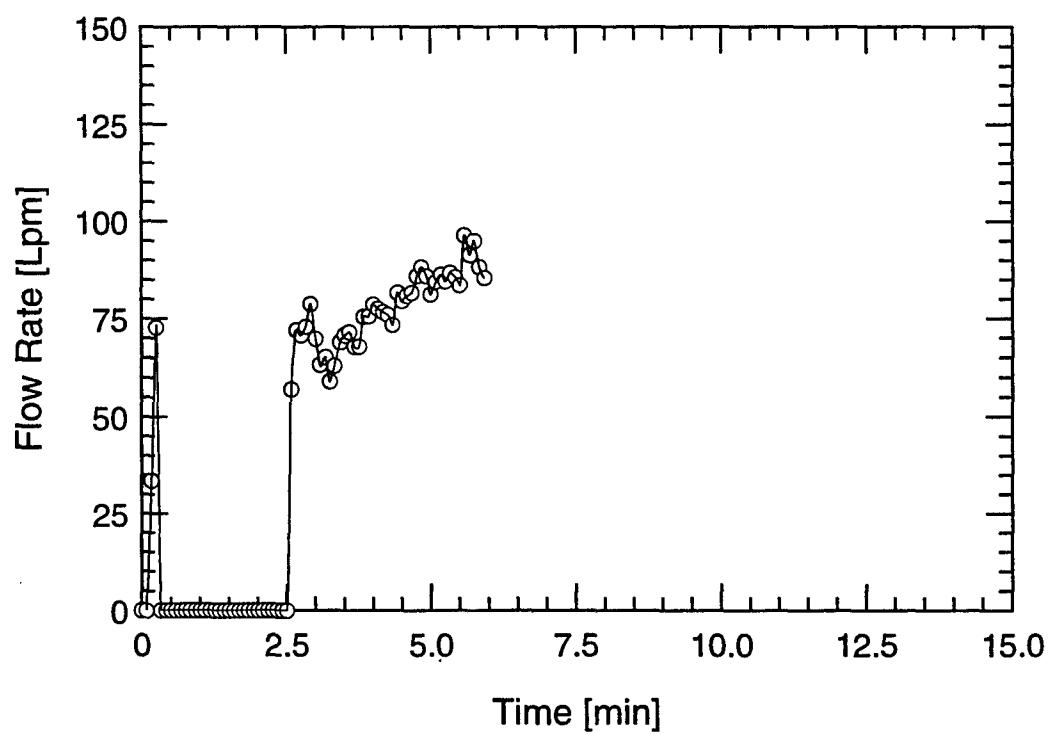
Forward Bulkhead

TEST #45

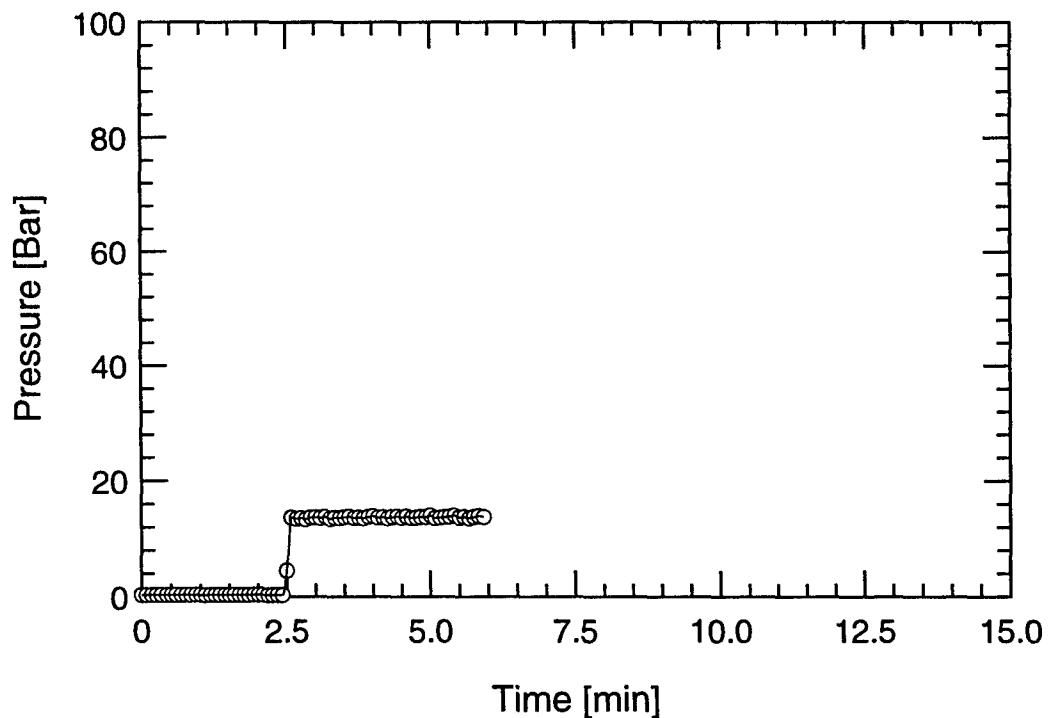


TEST #45

B-272



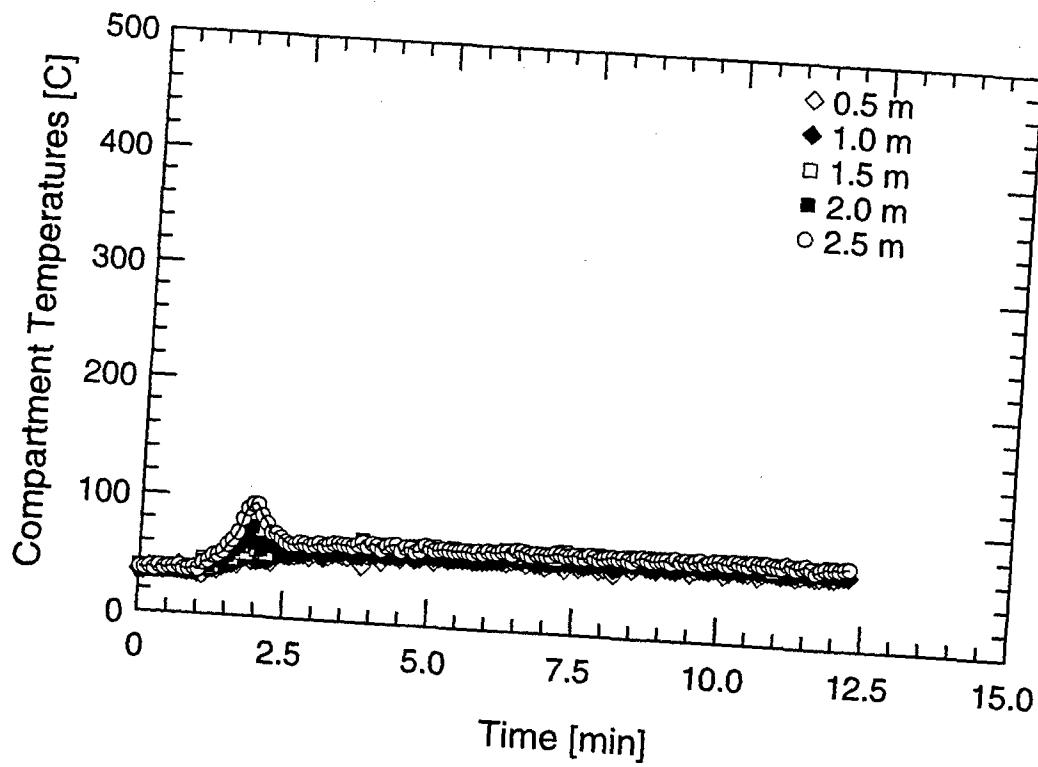
Water Mist System Flow Rate



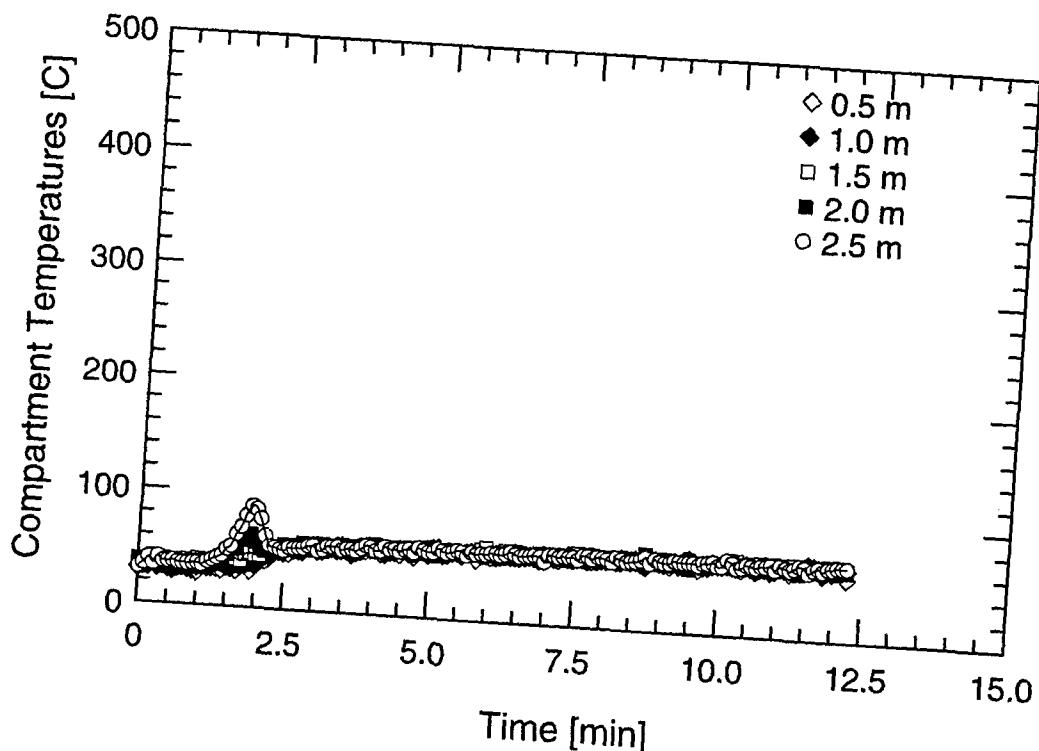
Water Mist System Pressure

TEST #45

B-273



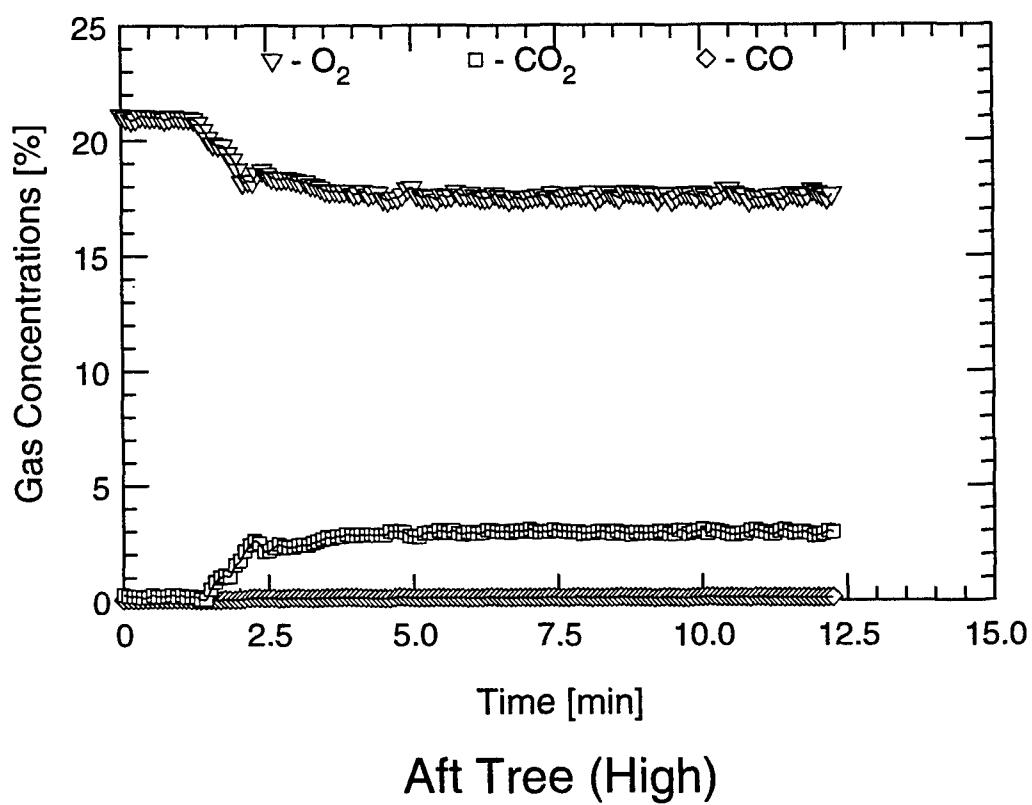
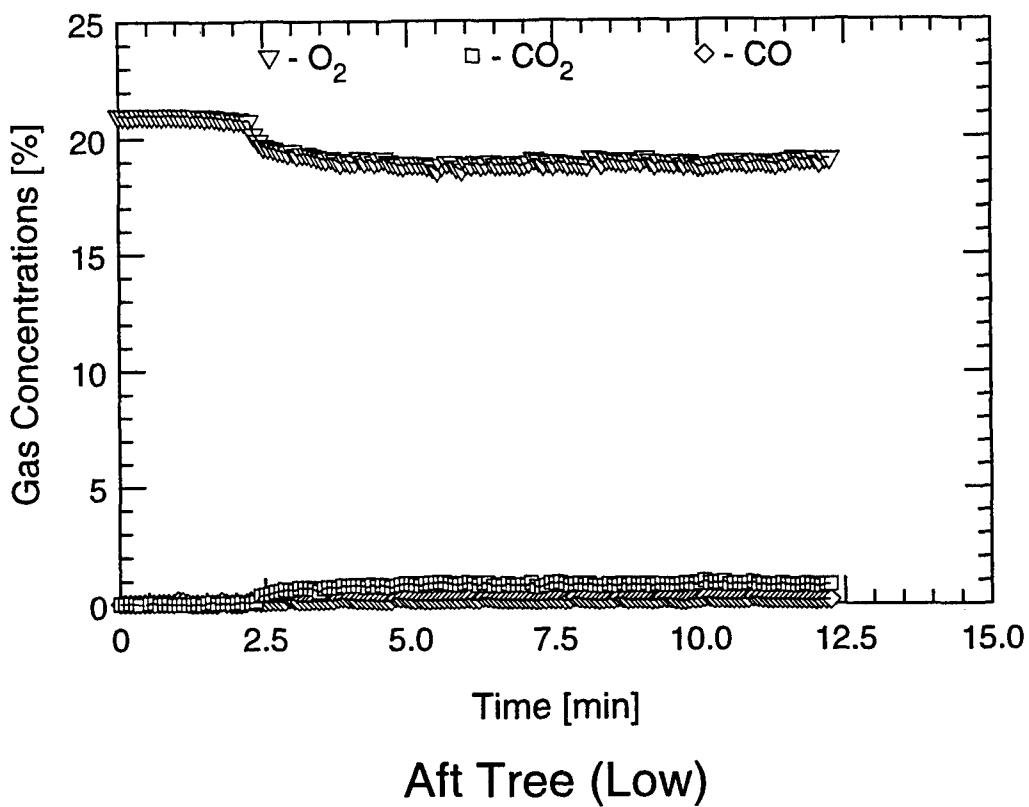
Aft Tree



Forward Tree

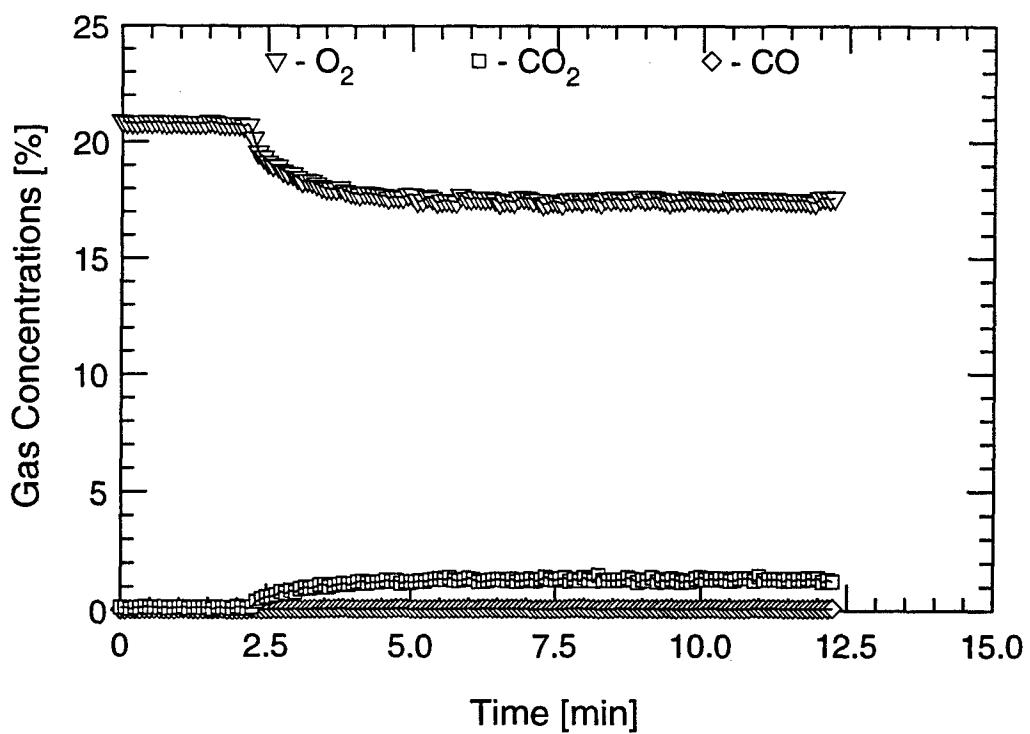
TEST #46

B-274

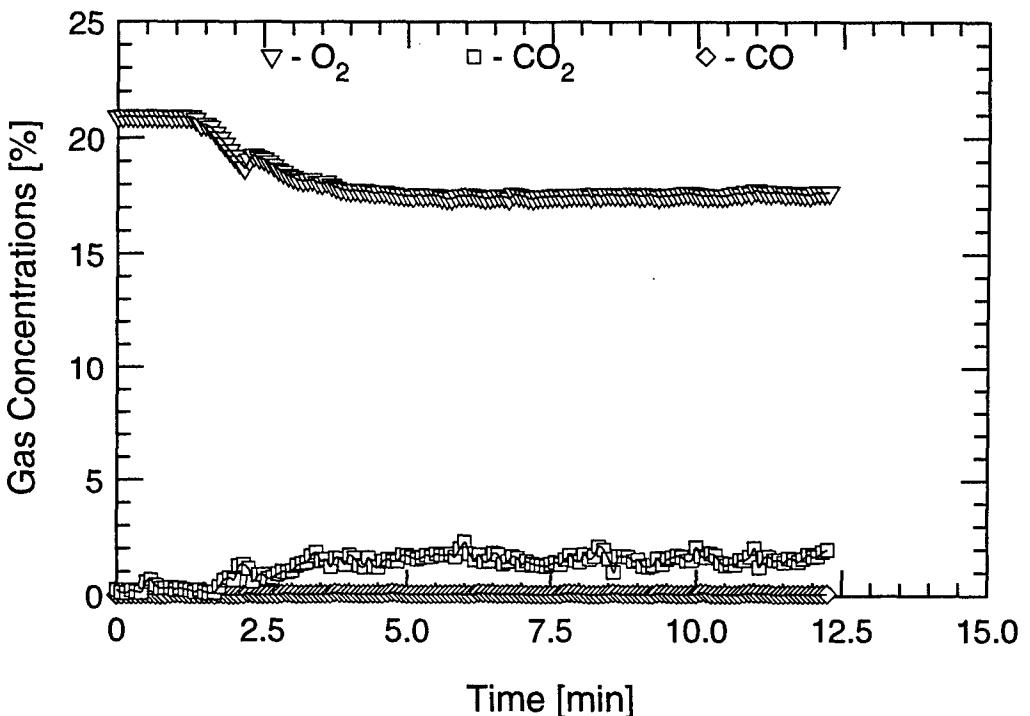


TEST #46

B-275



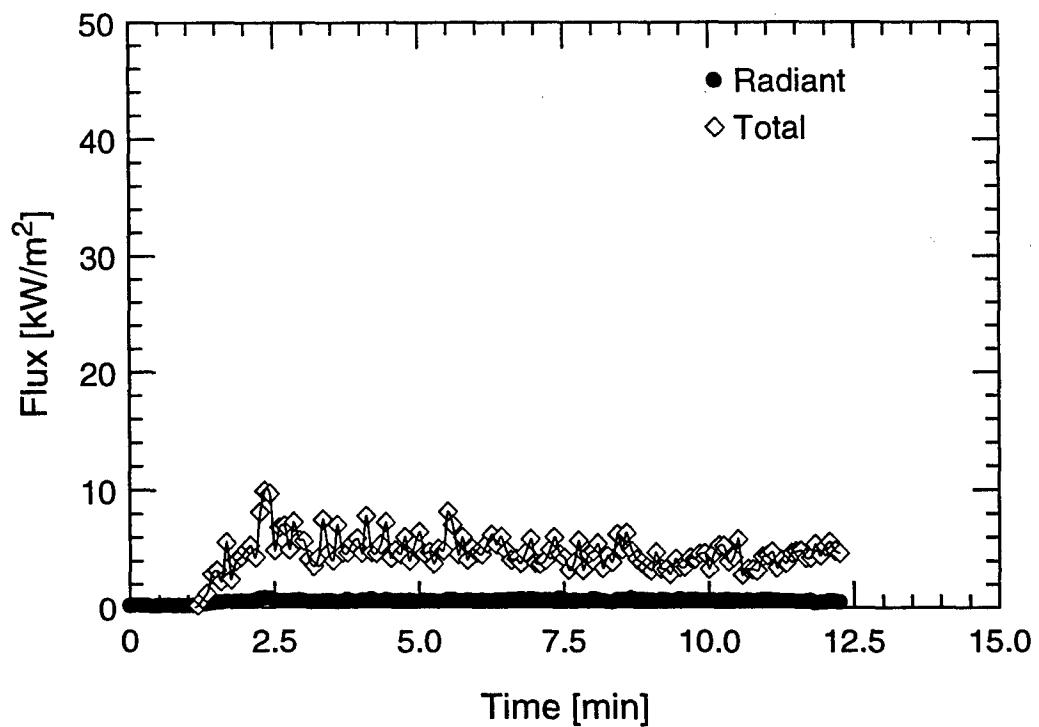
Forward Tree (Low)



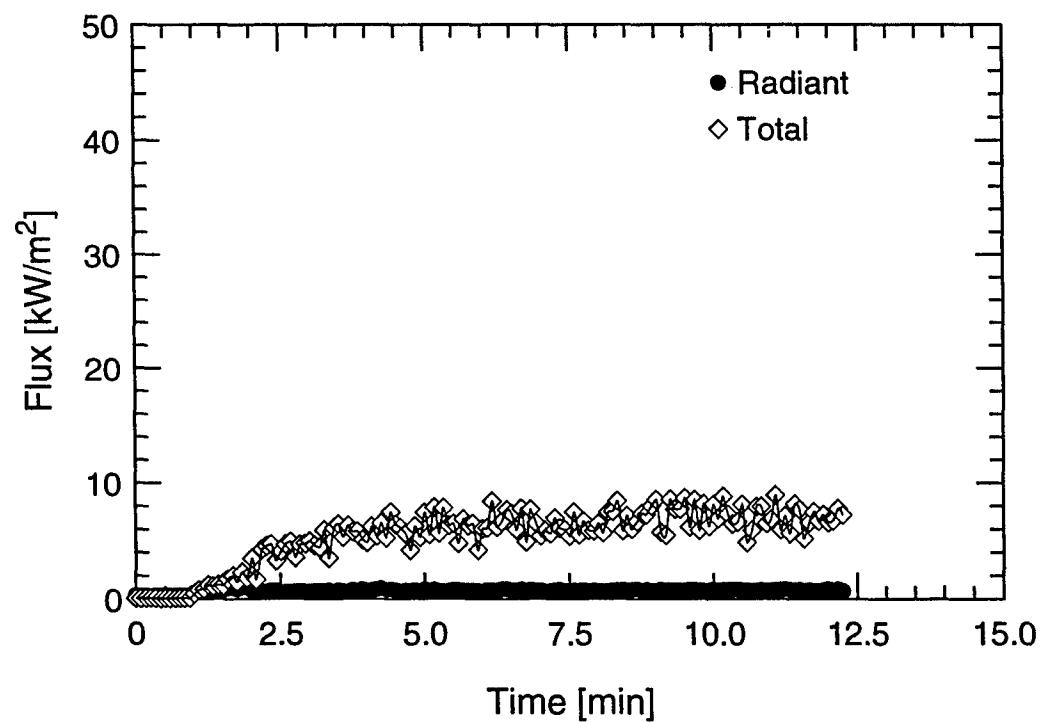
Forward Tree (High)

TEST #46

B-276



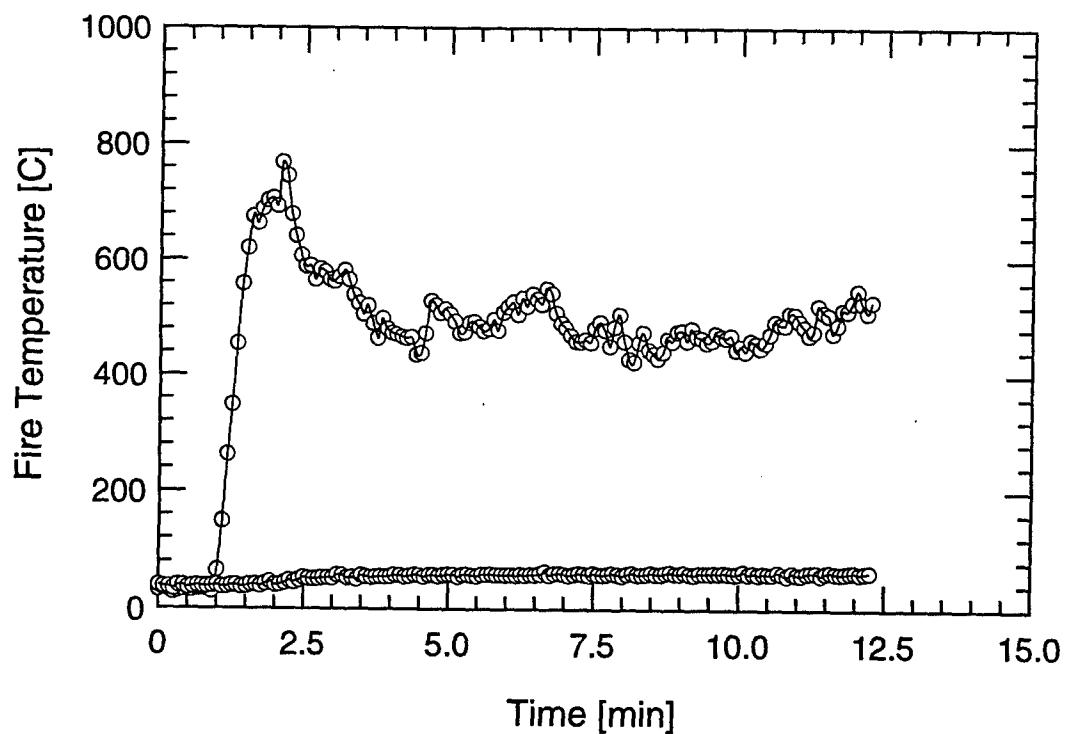
Overhead



Forward Bulkhead

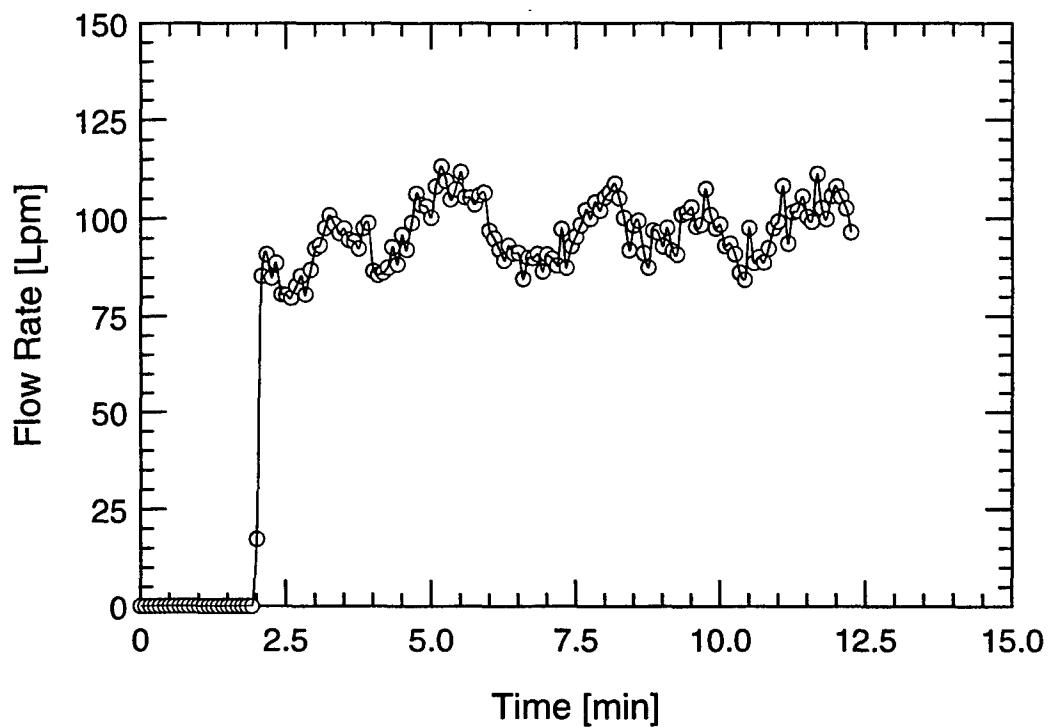
TEST #46

B-277

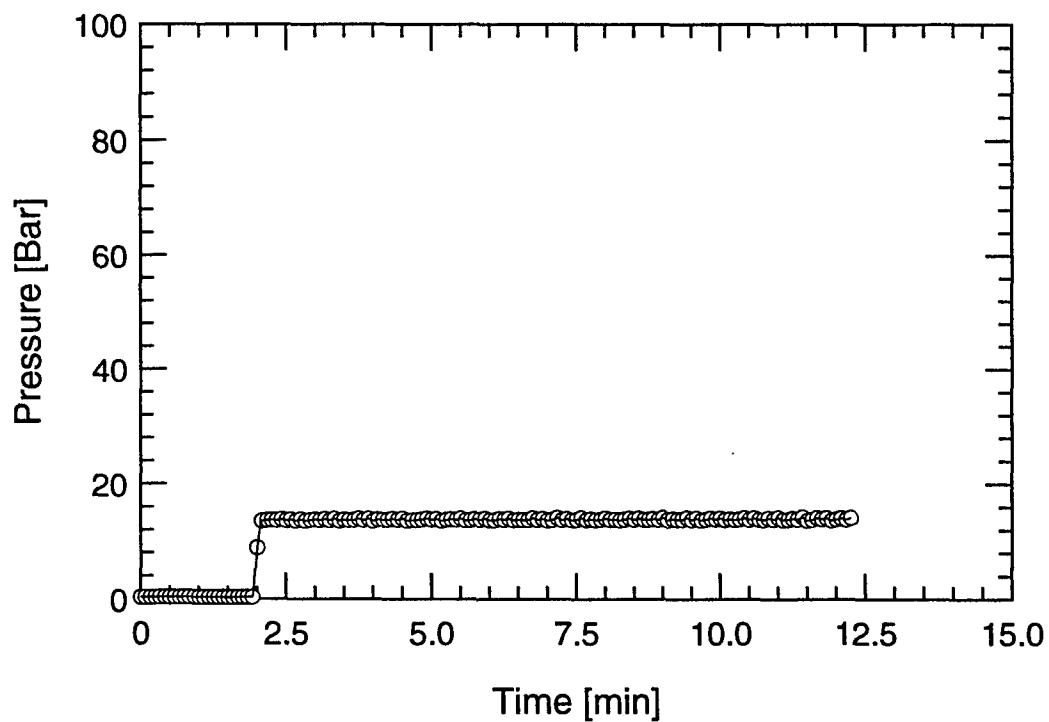


TEST #46

B-278



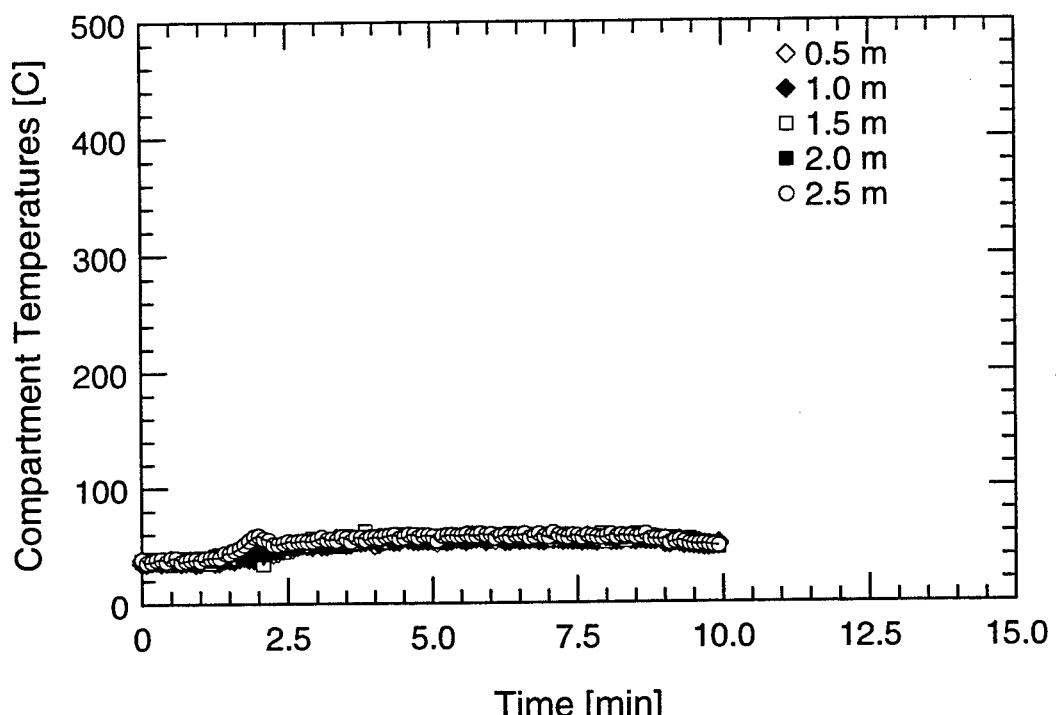
Water Mist System Flow Rate



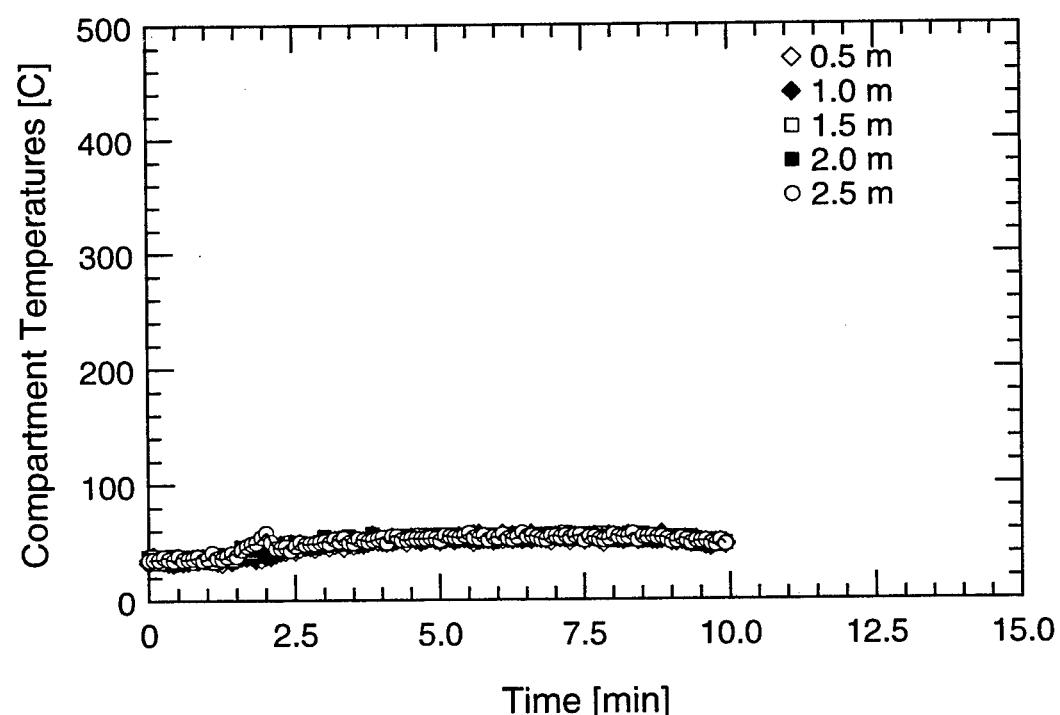
Water Mist System Pressure

TEST #46

B-279

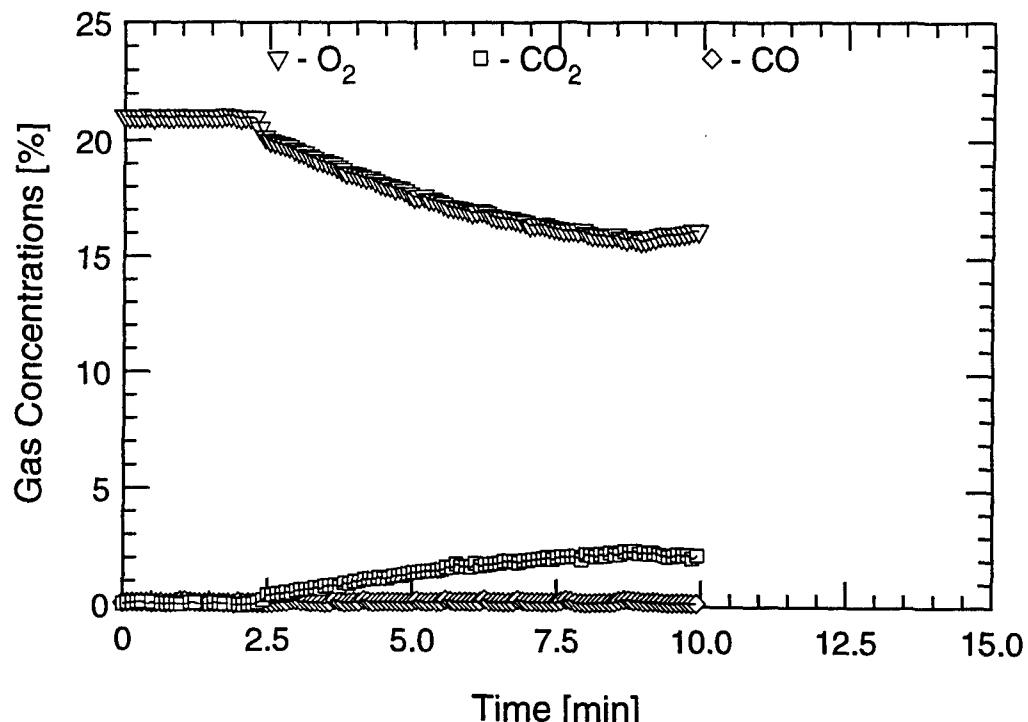


Aft Tree

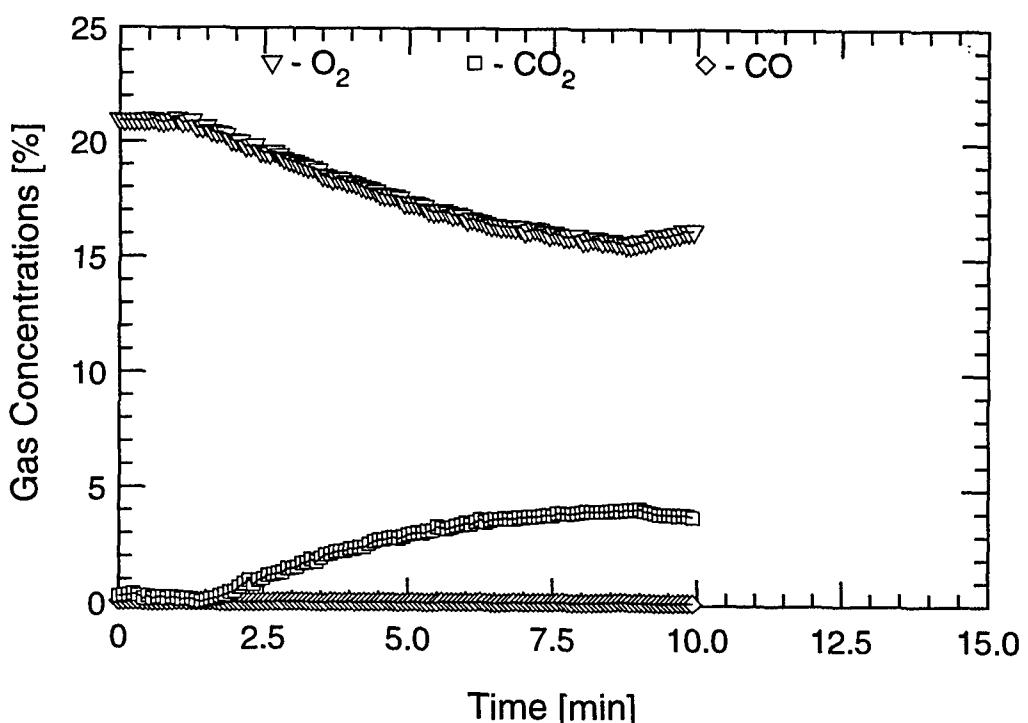


Forward Tree

TEST #47

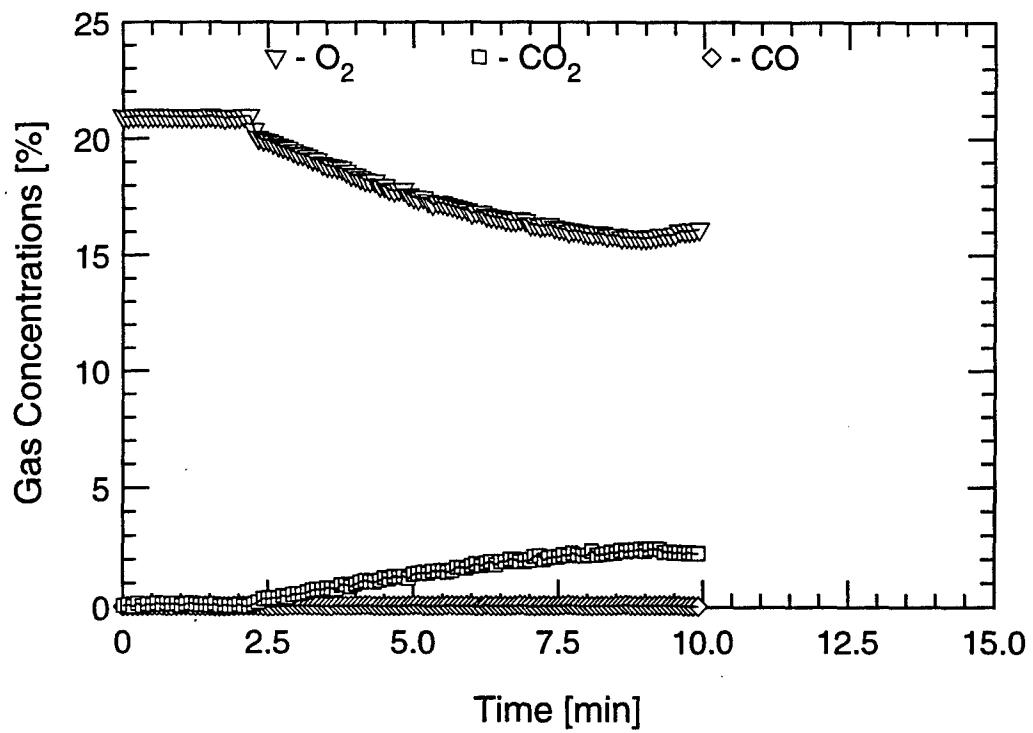


Aft Tree (Low)

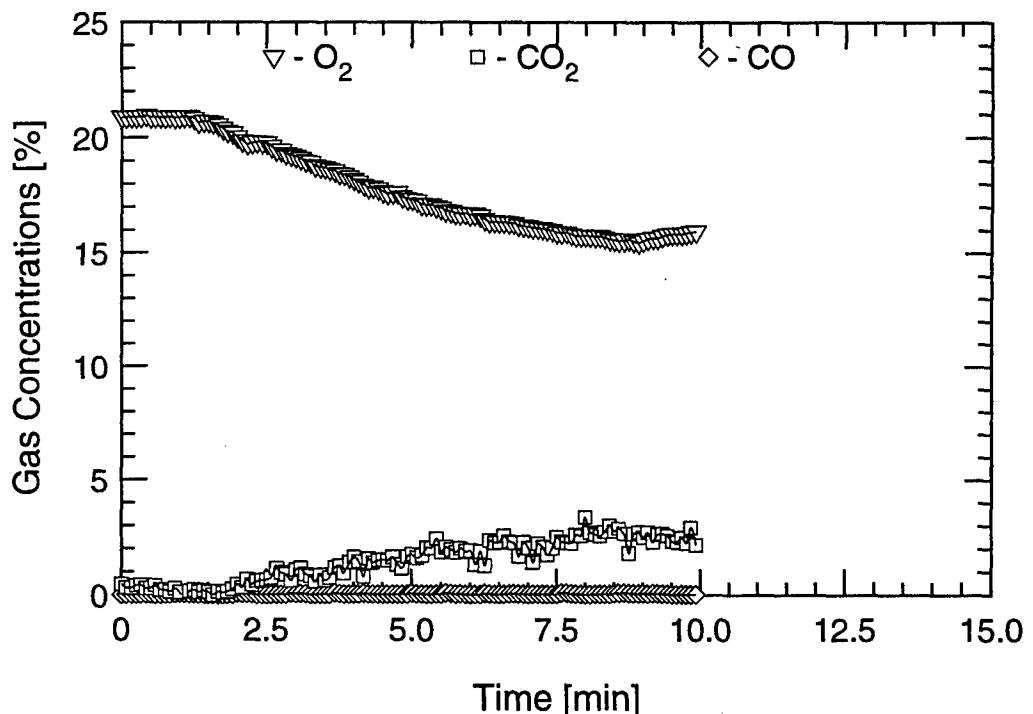


Aft Tree (High)

TEST #47



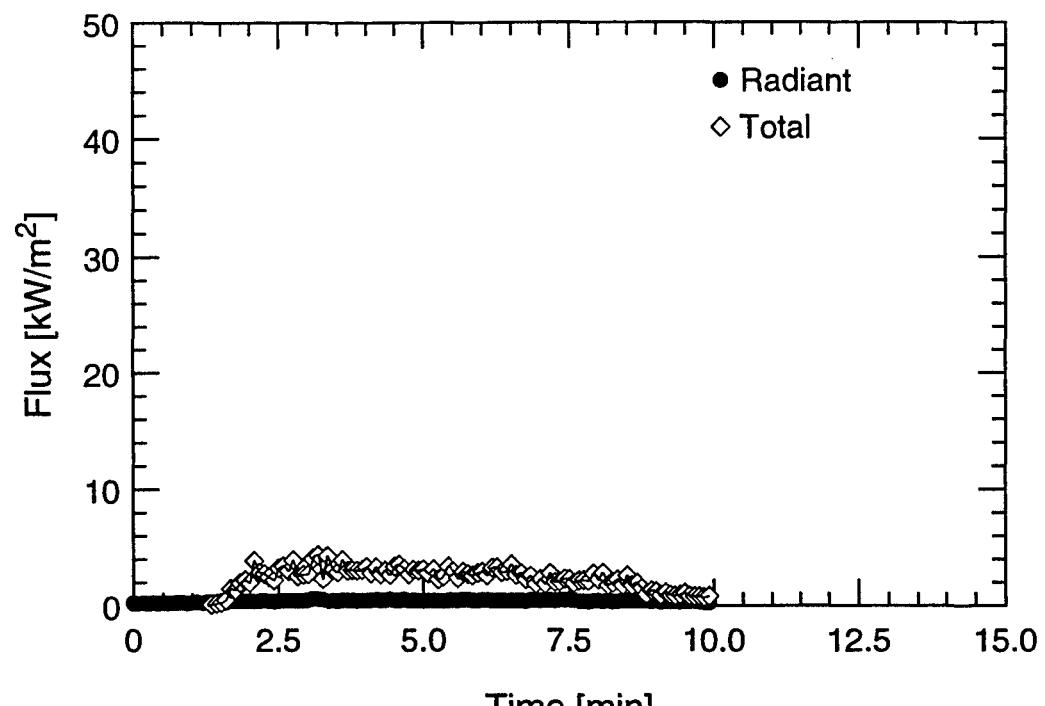
Forward Tree (Low)



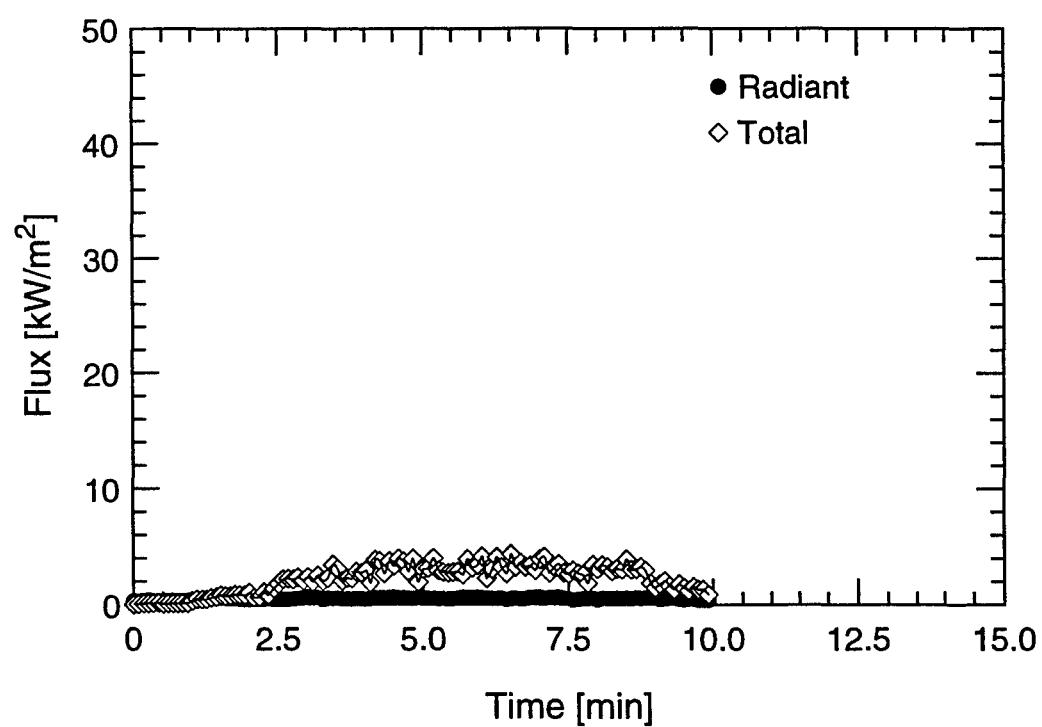
Forward Tree (High)

TEST #47

B-282



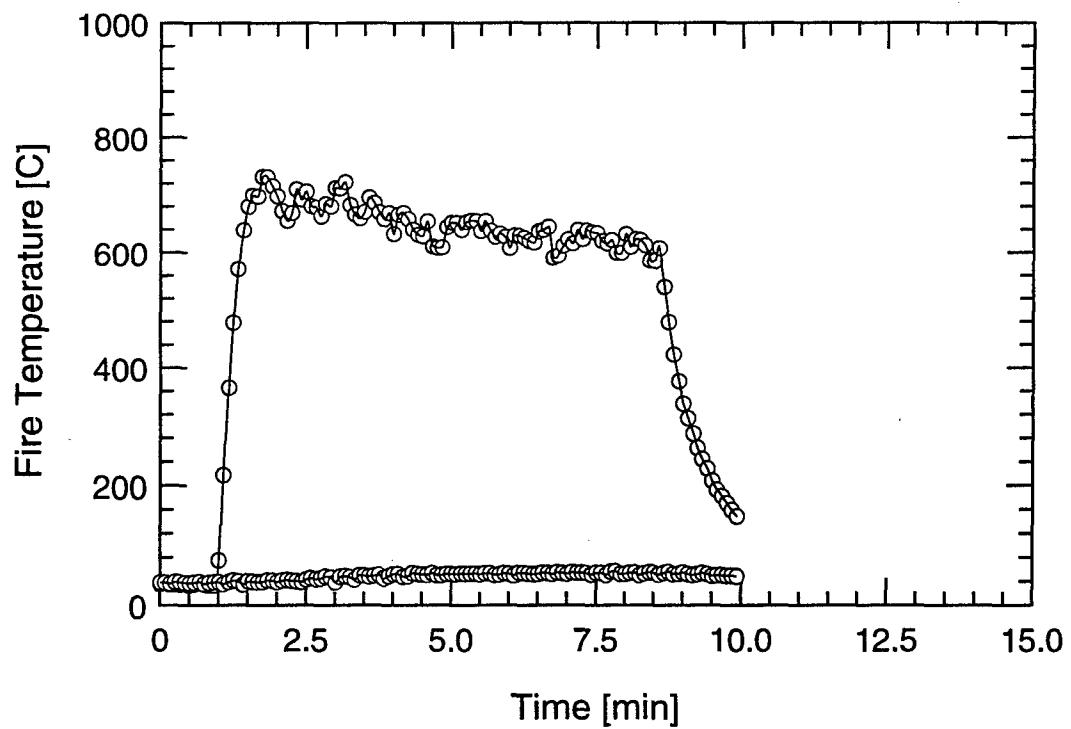
Overhead



Forward Bulkhead

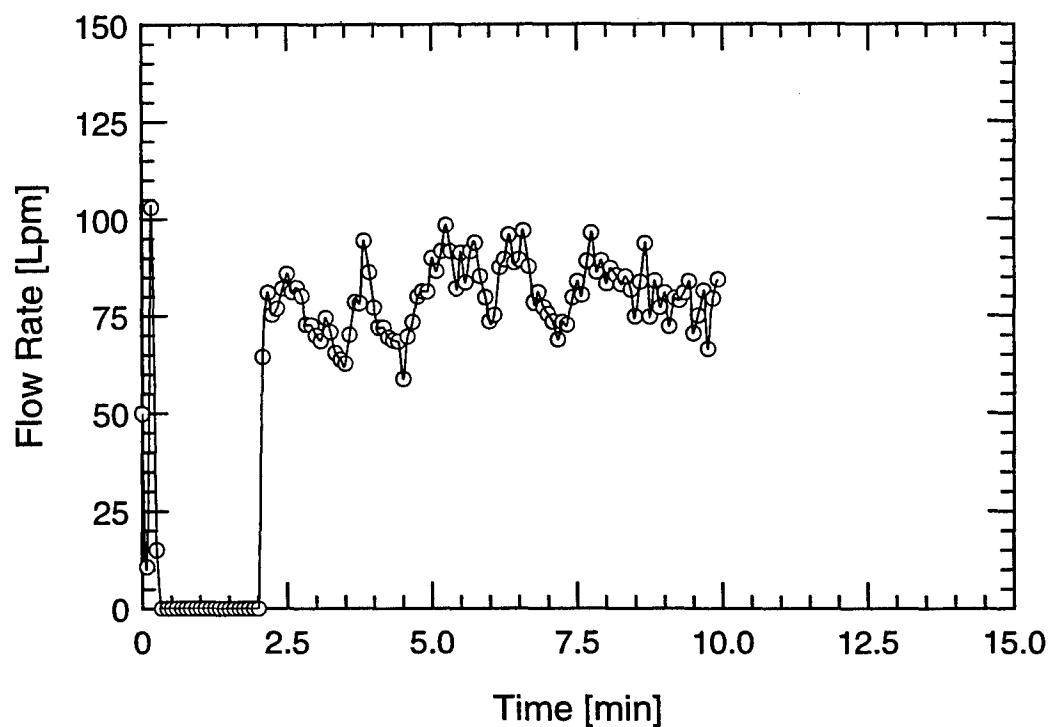
TEST #47

B-283

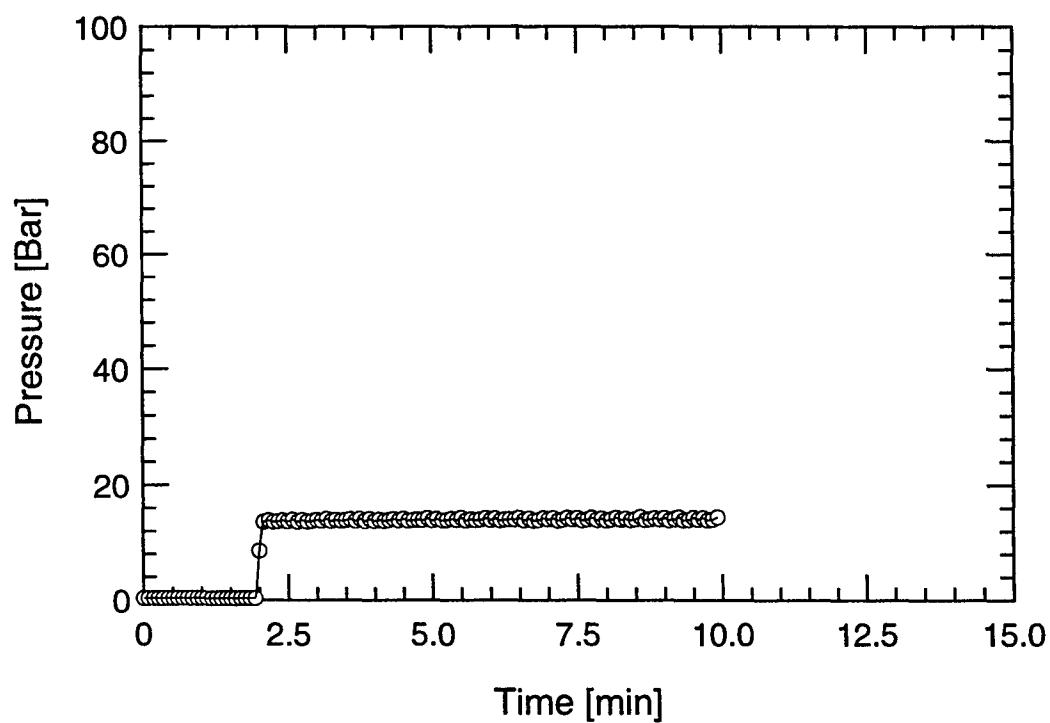


TEST #47

B-284



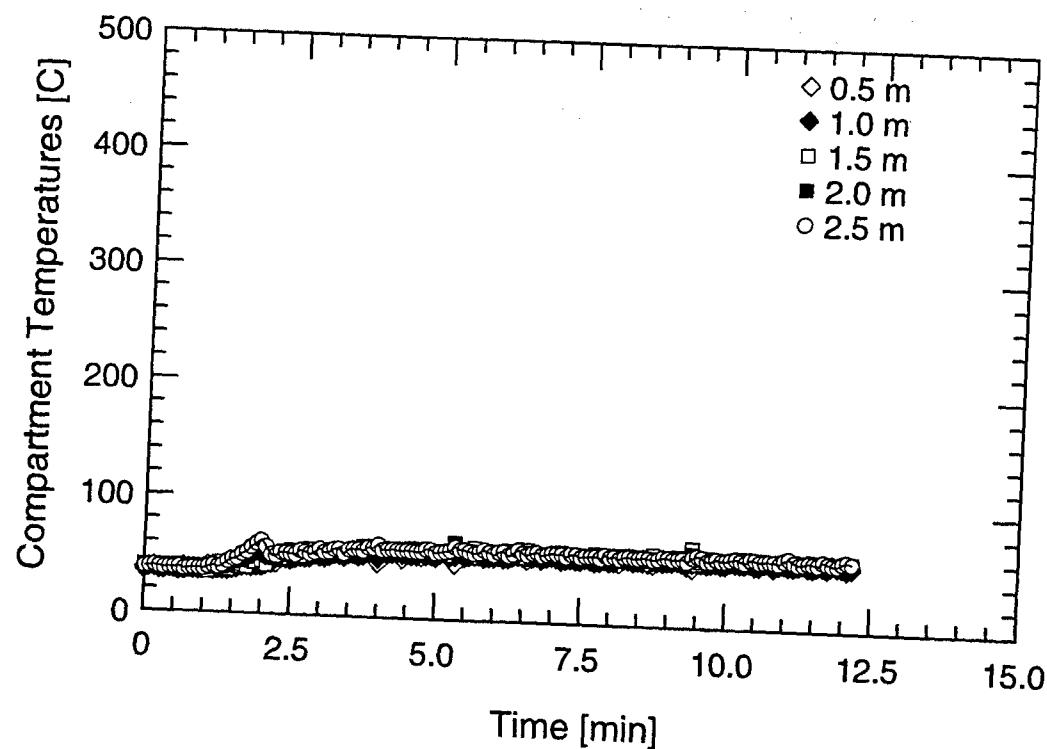
Water Mist System Flow Rate



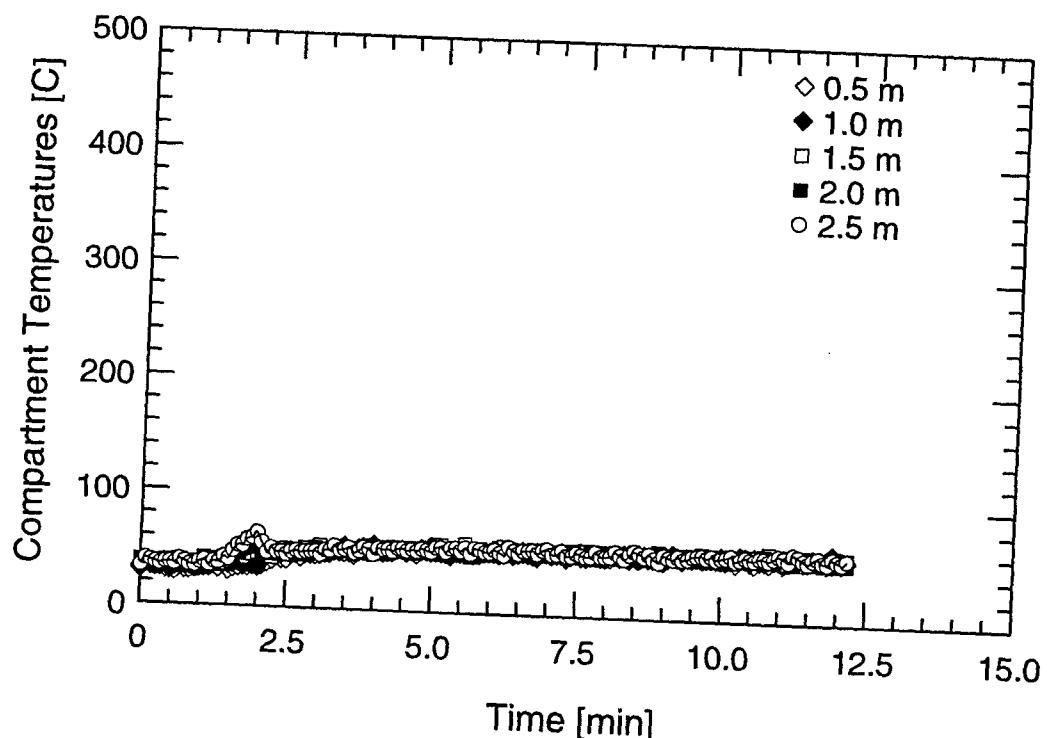
Water Mist System Pressure

TEST #47

B-285



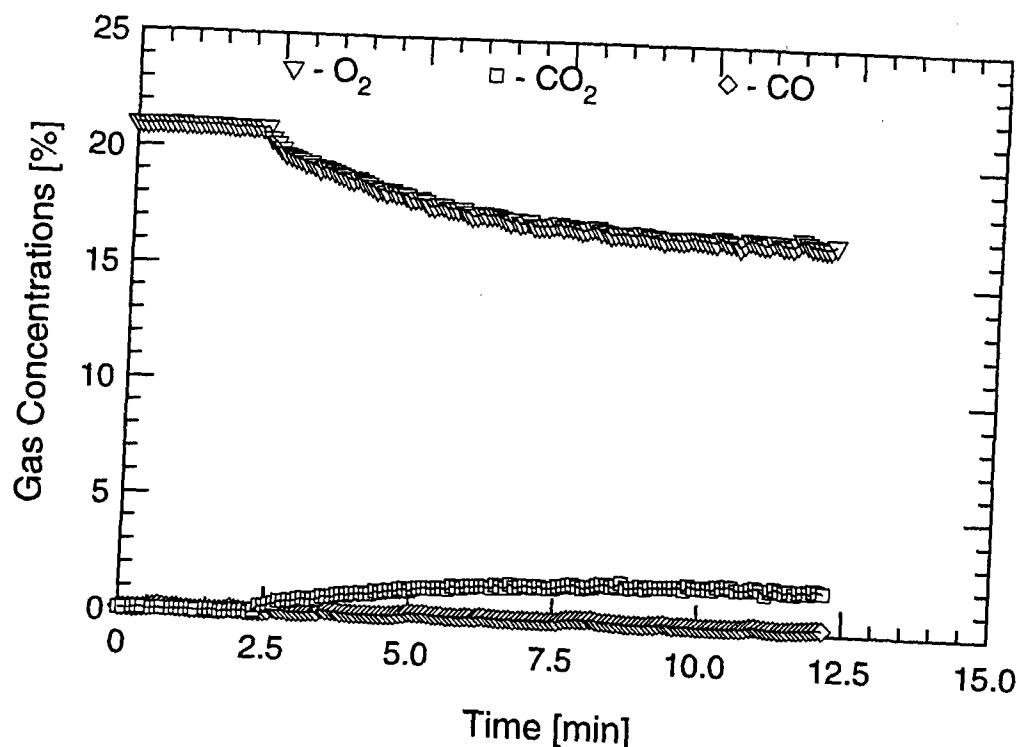
Aft Tree



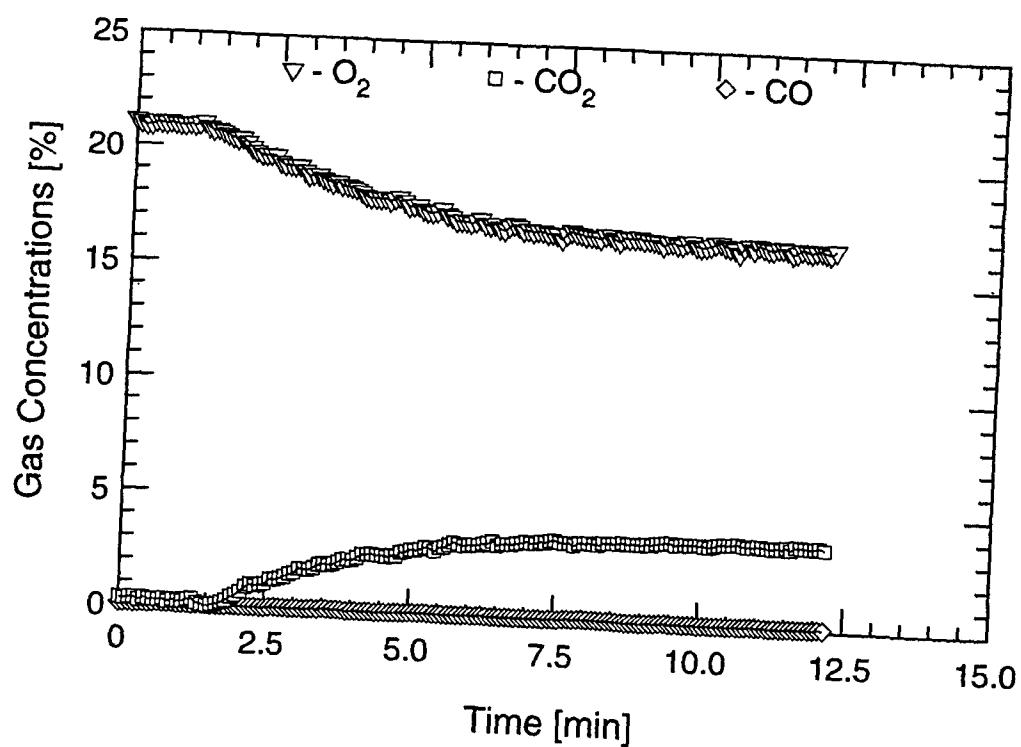
Forward Tree

TEST #48

B-286



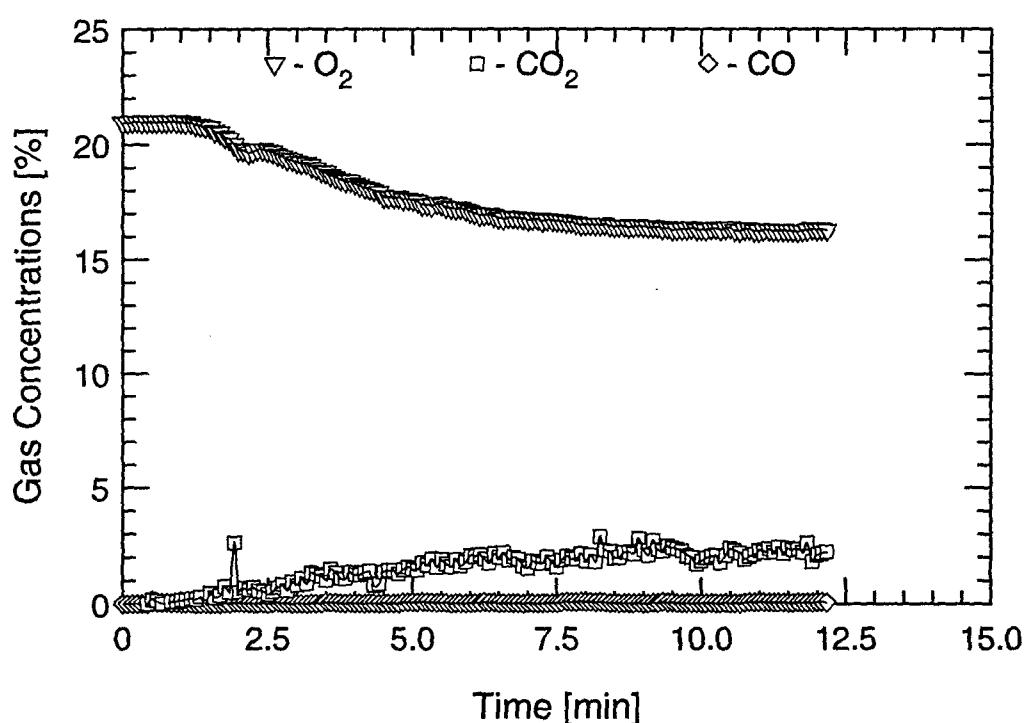
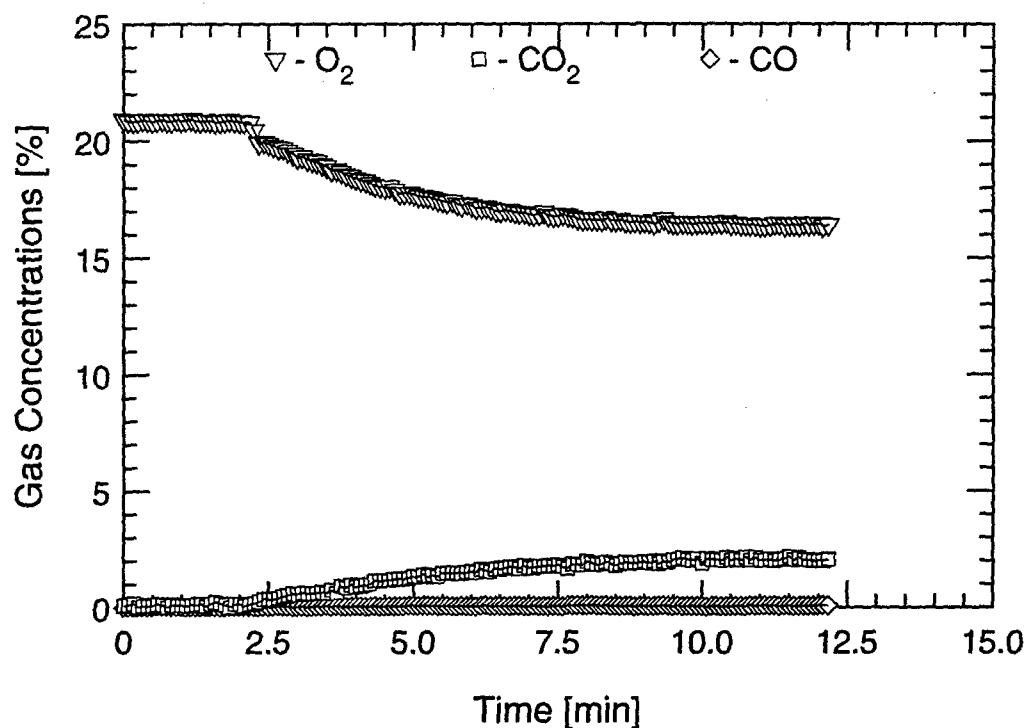
Aft Tree (Low)



Aft Tree (High)

TEST #48

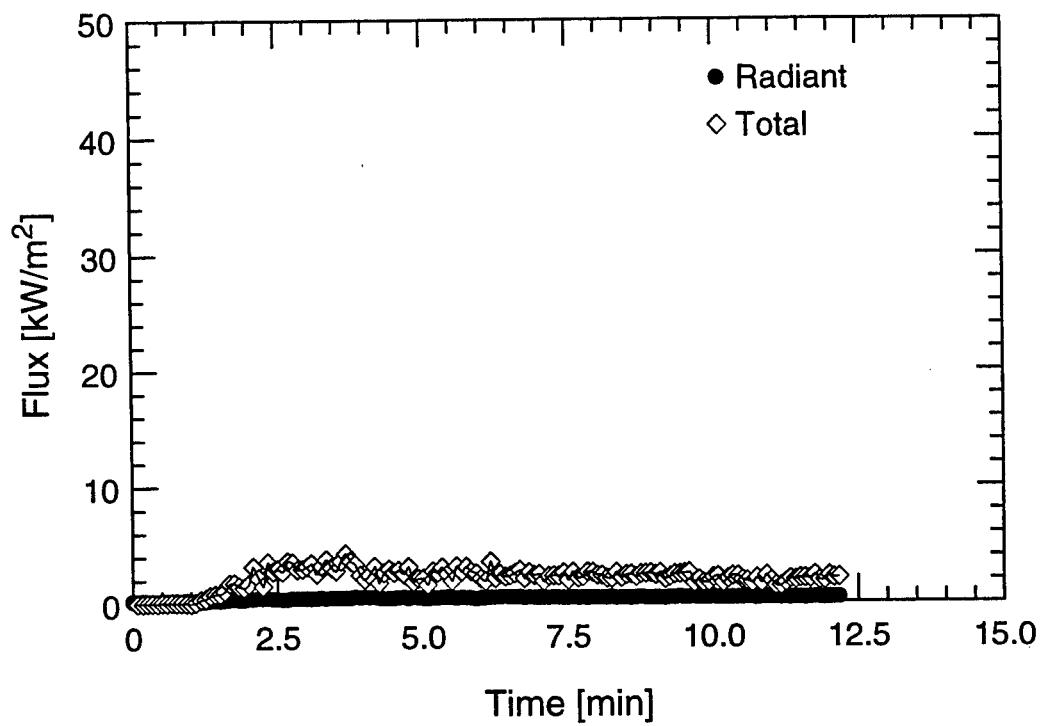
B-287



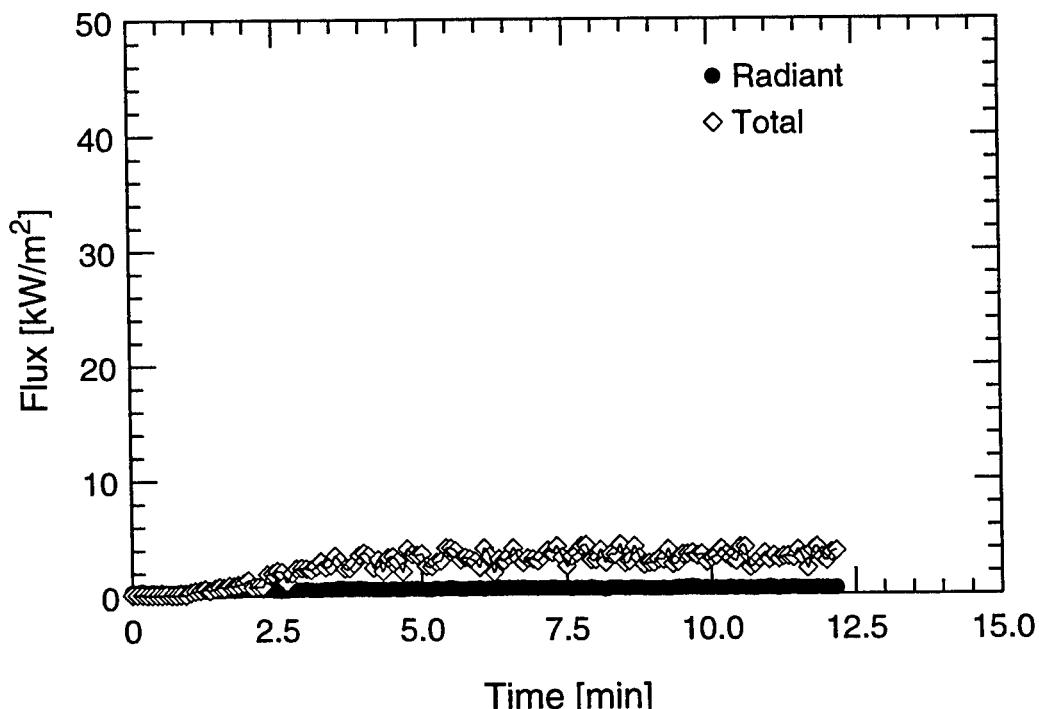
Forward Tree (High)

TEST #48

B-288



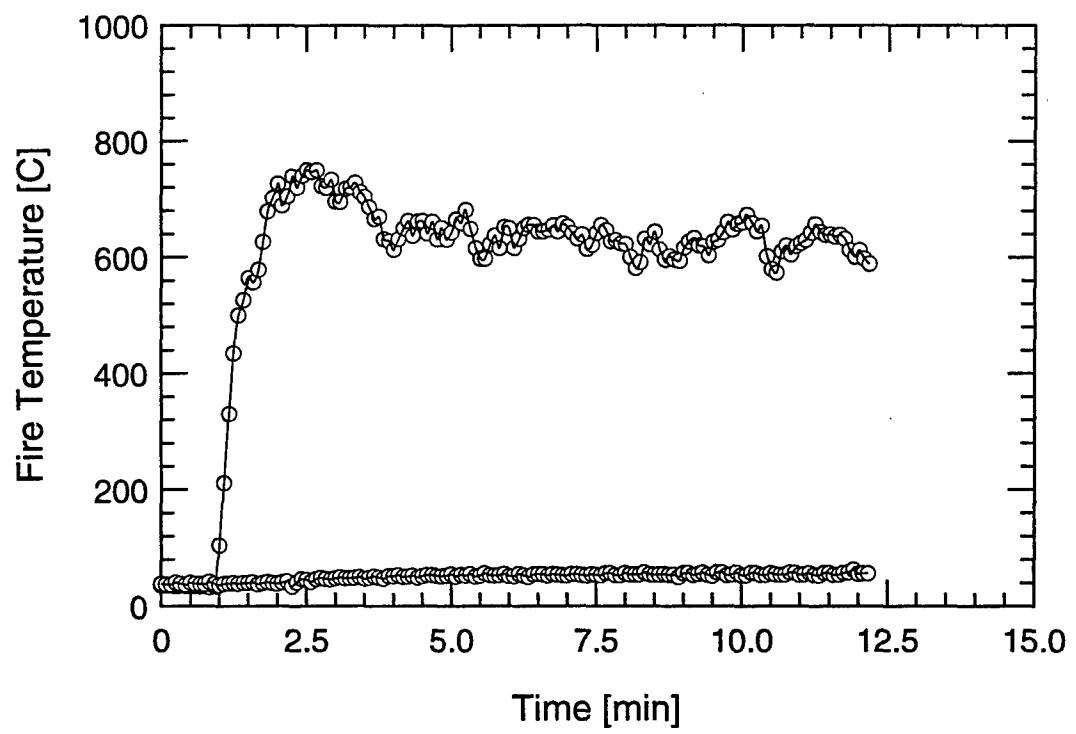
Overhead



Forward Bulkhead

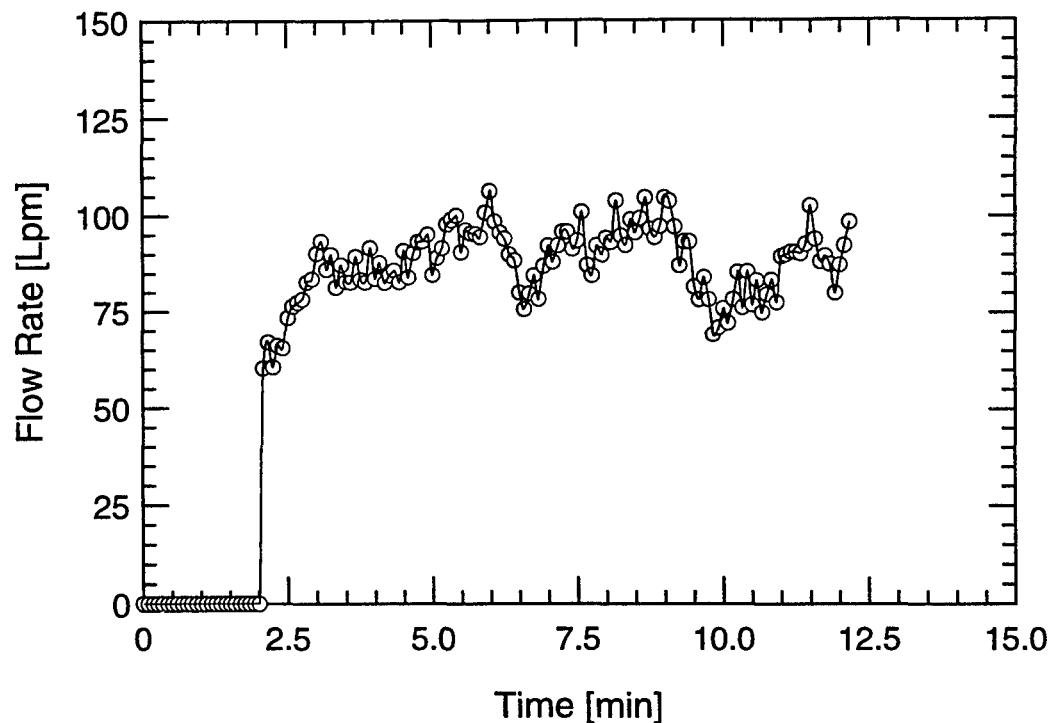
TEST #48

B-289

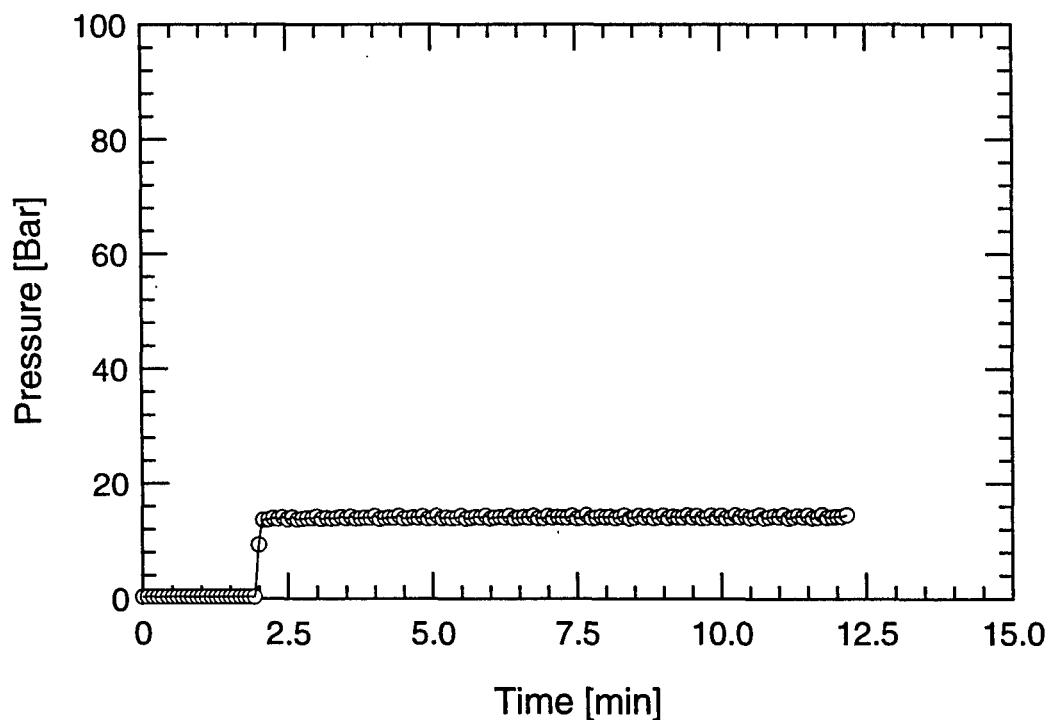


TEST #48

B-290

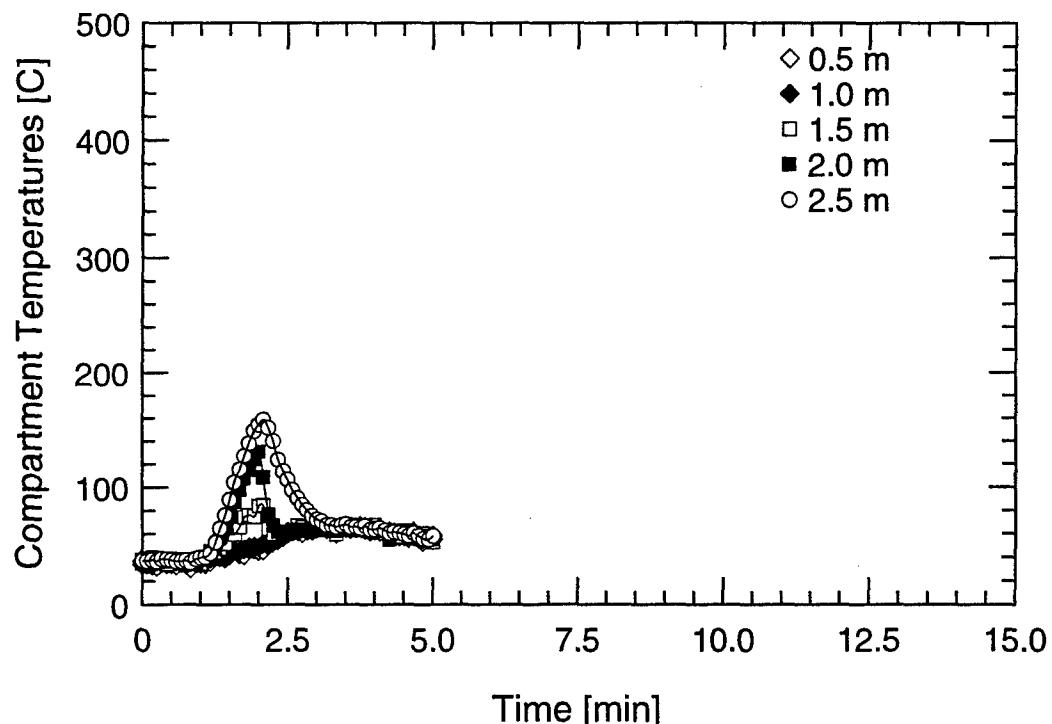


Water Mist System Flow Rate

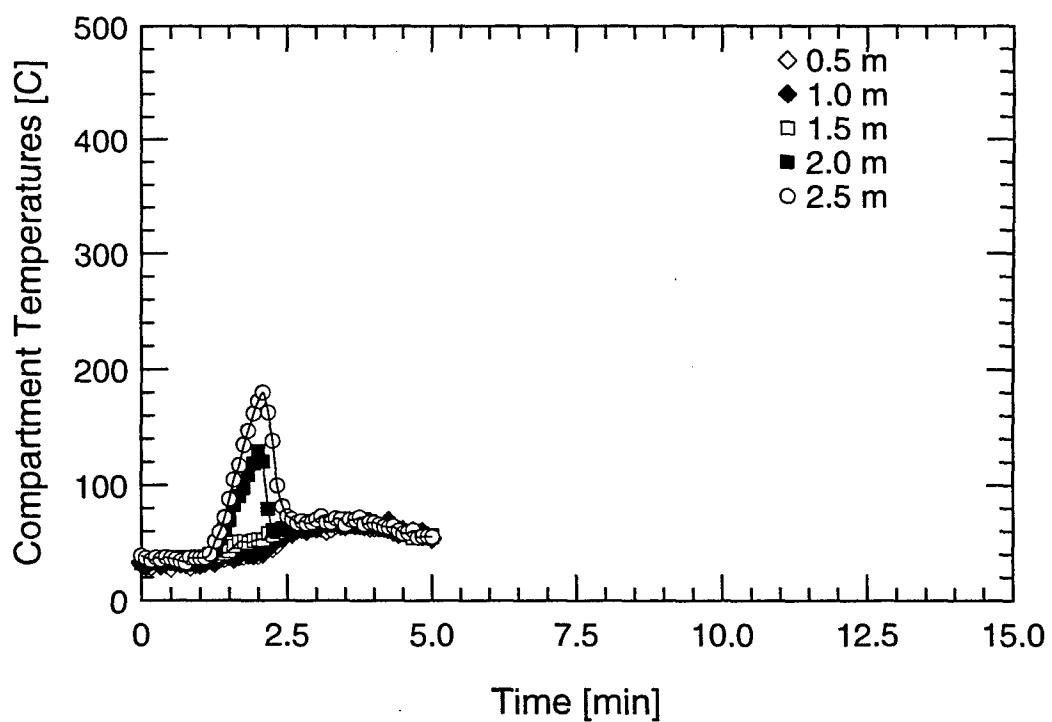


Water Mist System Pressure

TEST #48



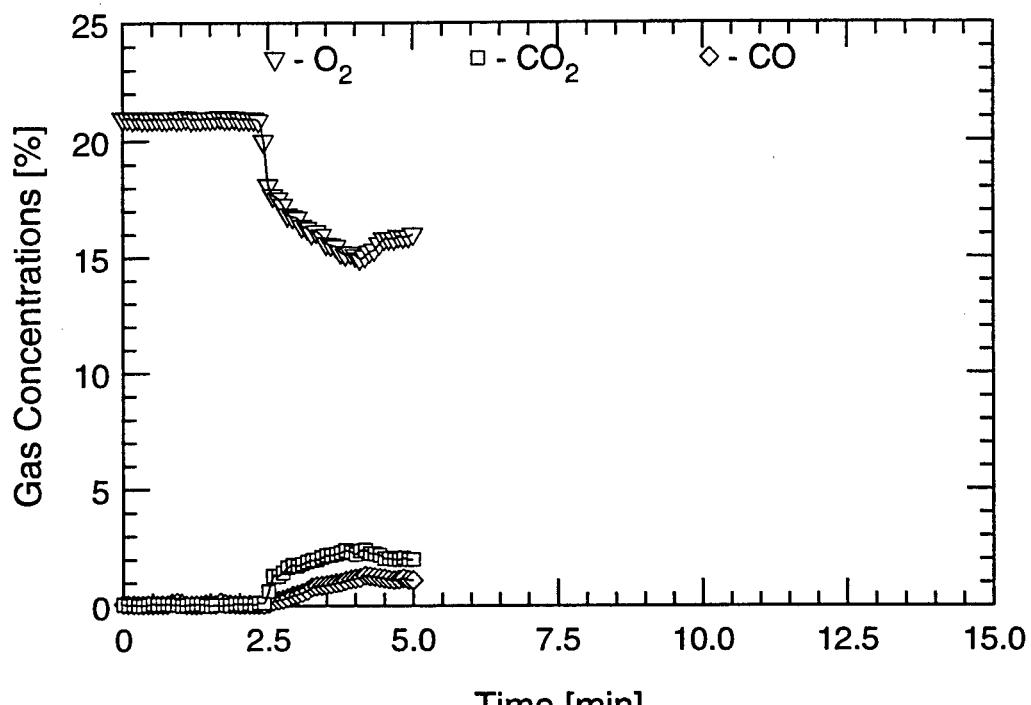
Aft Tree



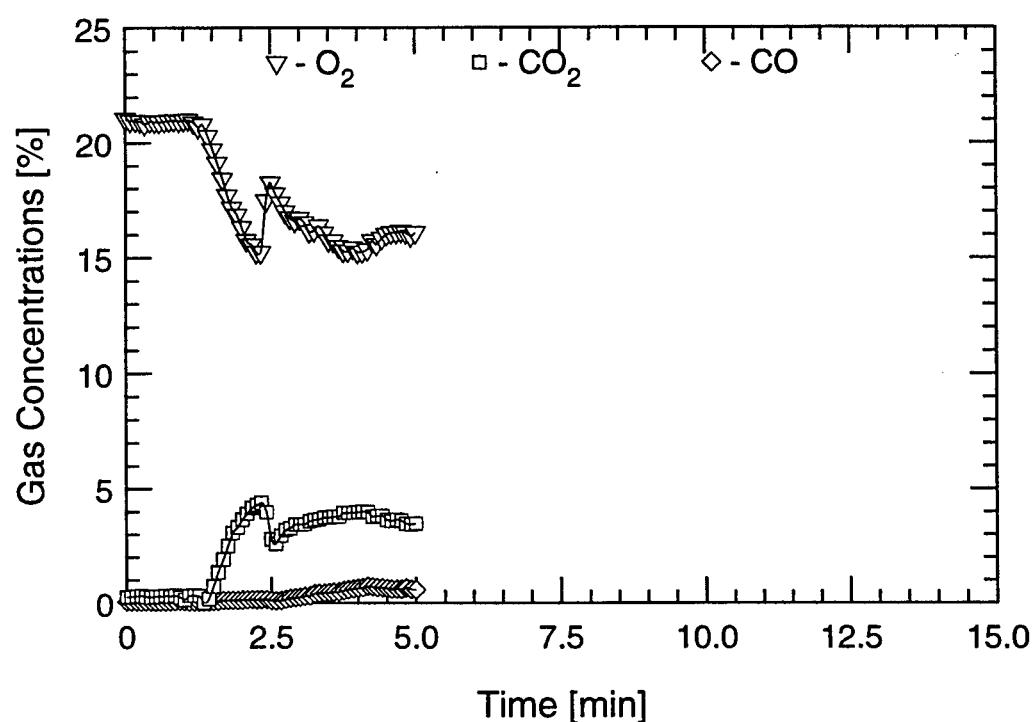
Forward Tree

TEST #49

B-292



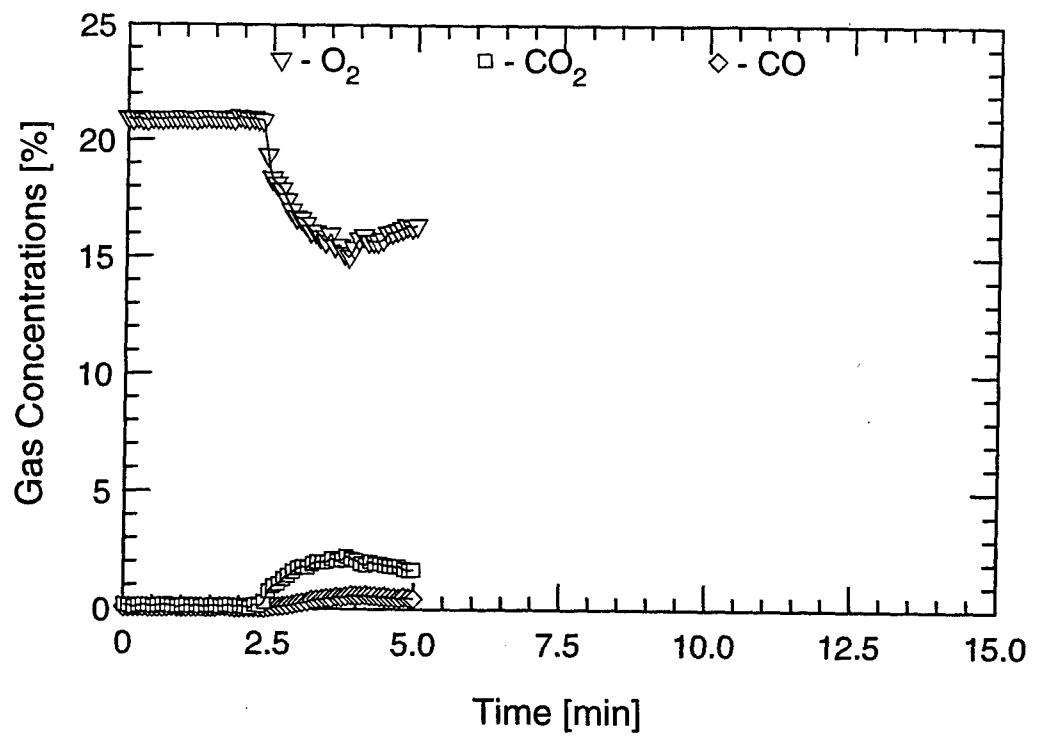
Aft Tree (Low)



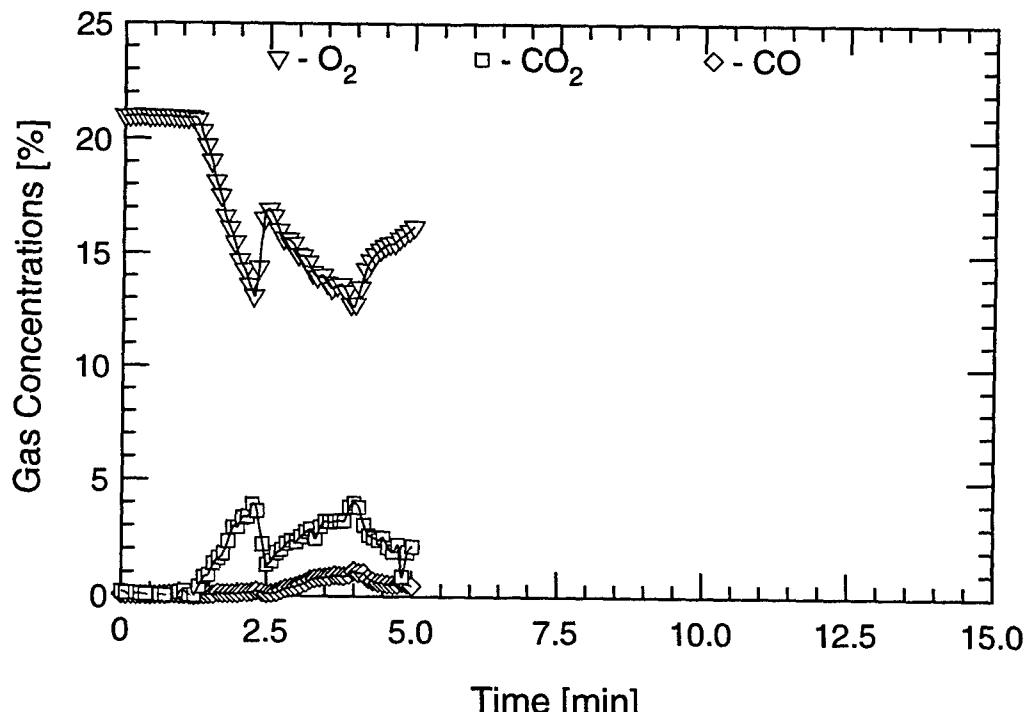
Aft Tree (High)

TEST #49

B-293



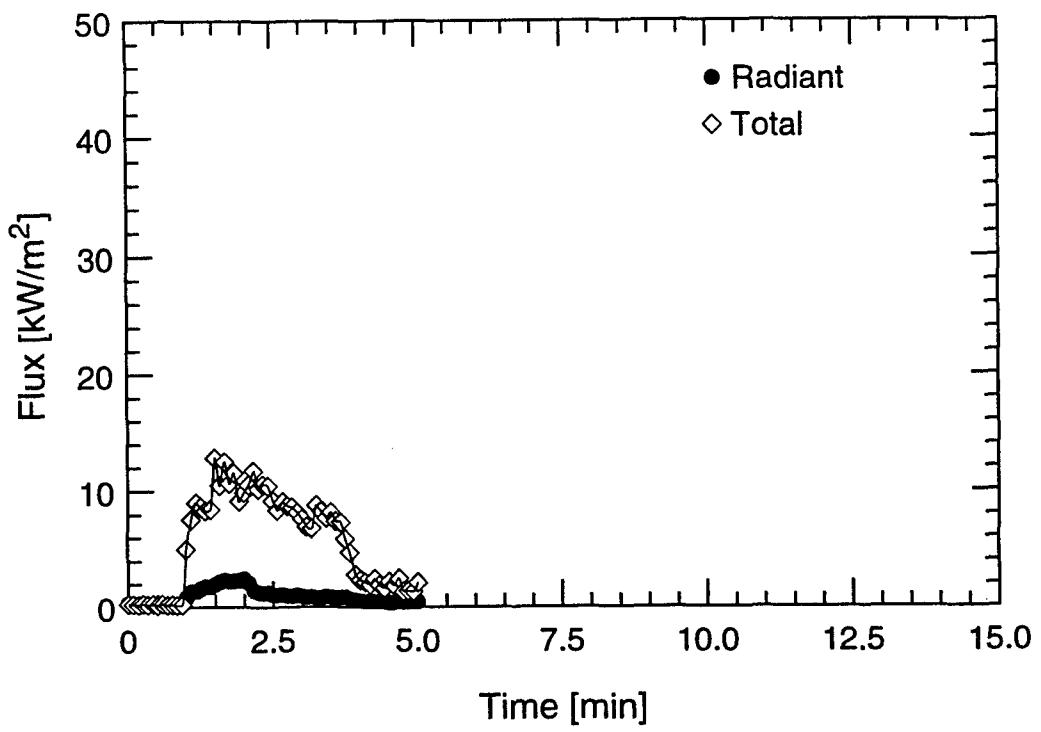
Forward Tree (Low)



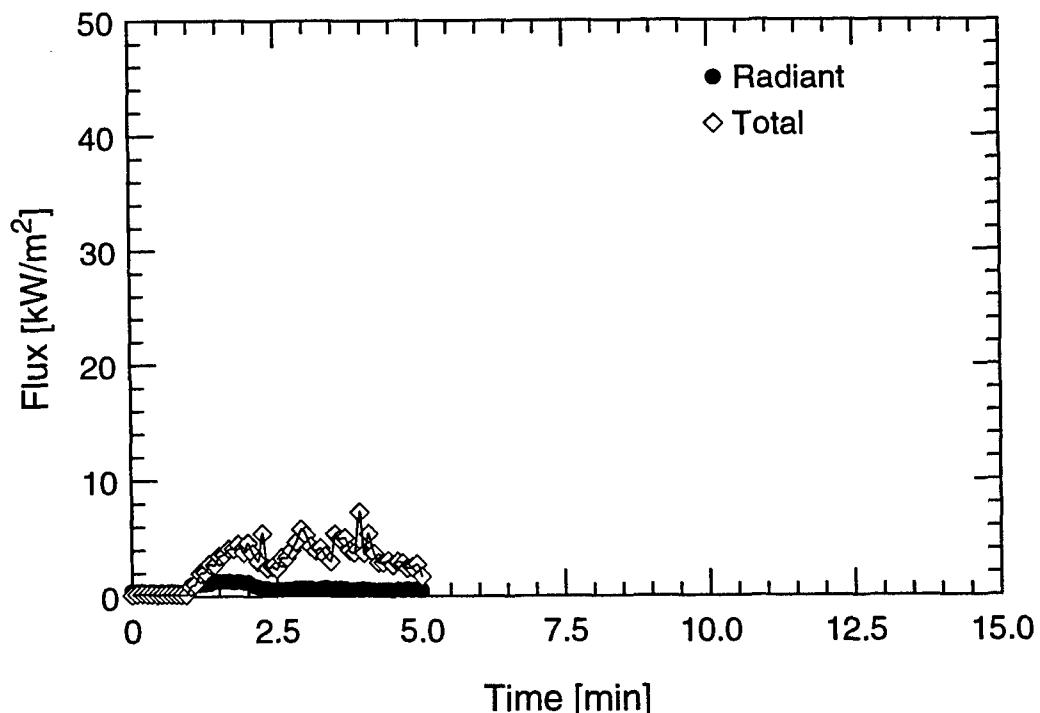
Forward Tree (High)

TEST #49

B-294

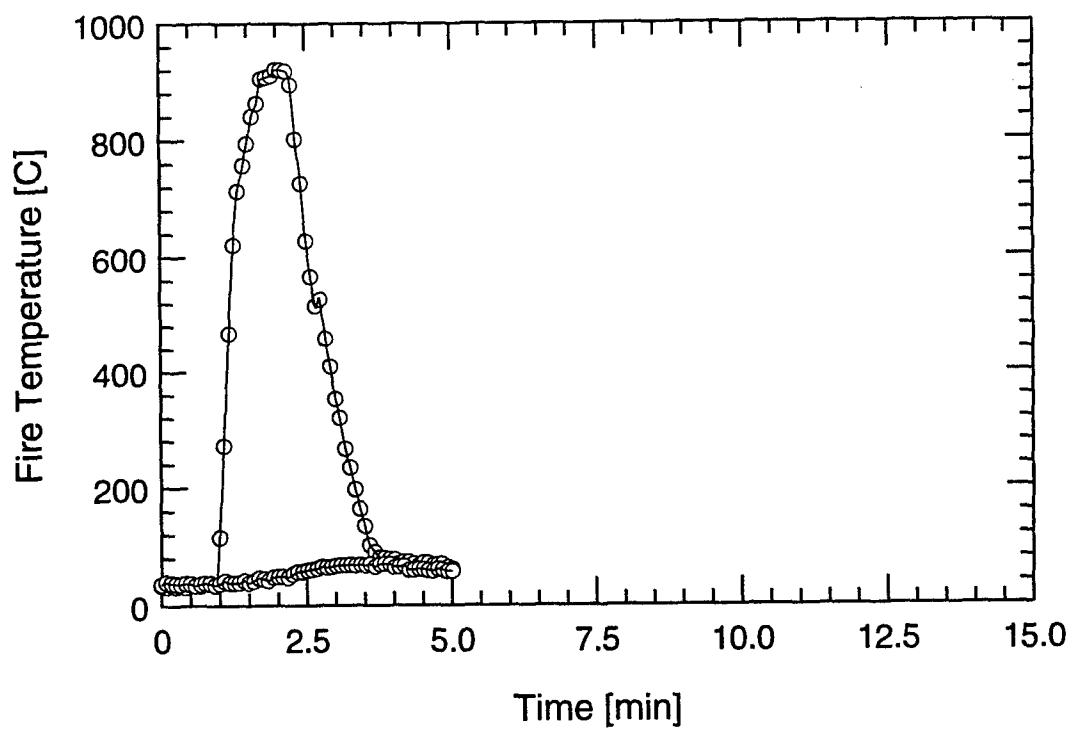


Overhead



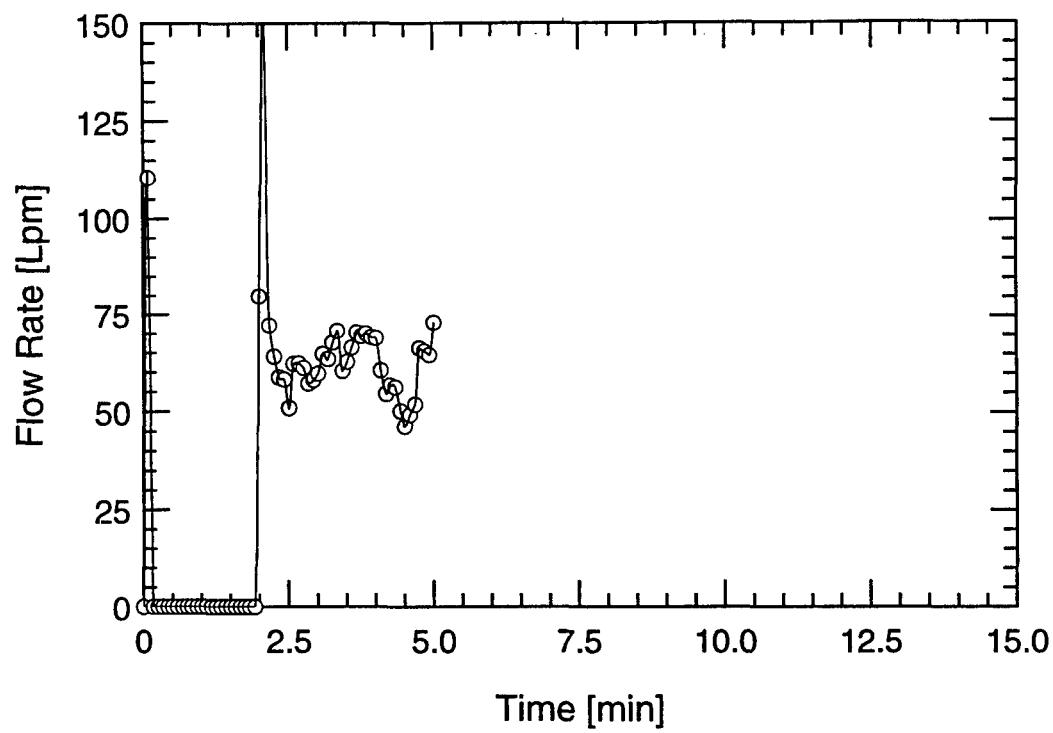
Forward Bulkhead

TEST #49

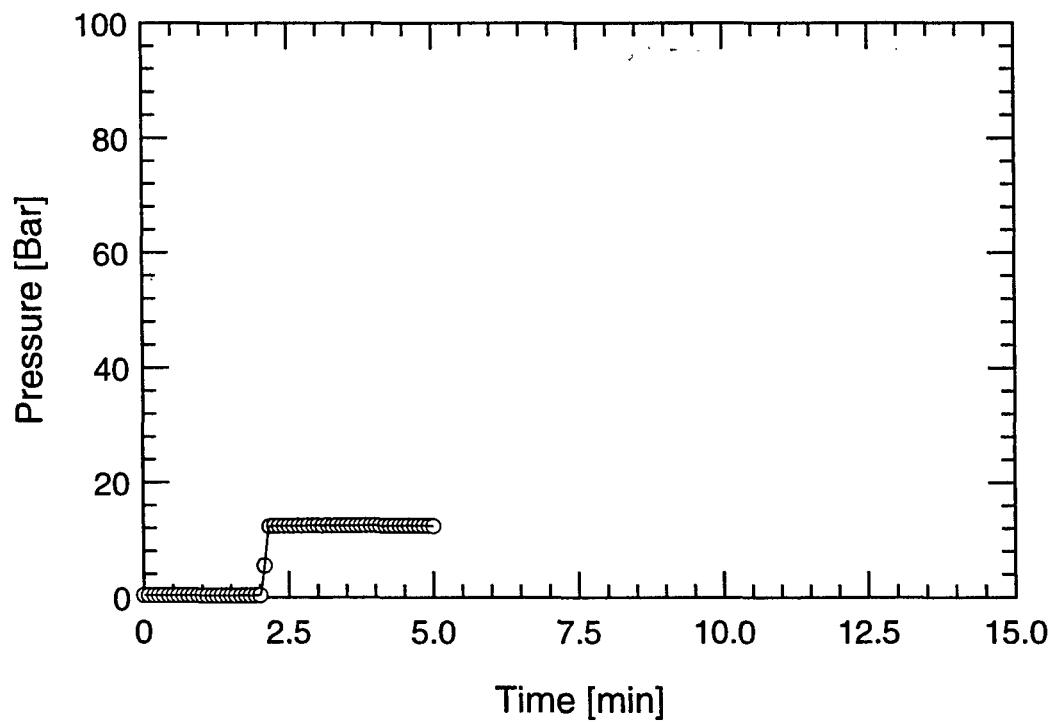


TEST #49

B-296



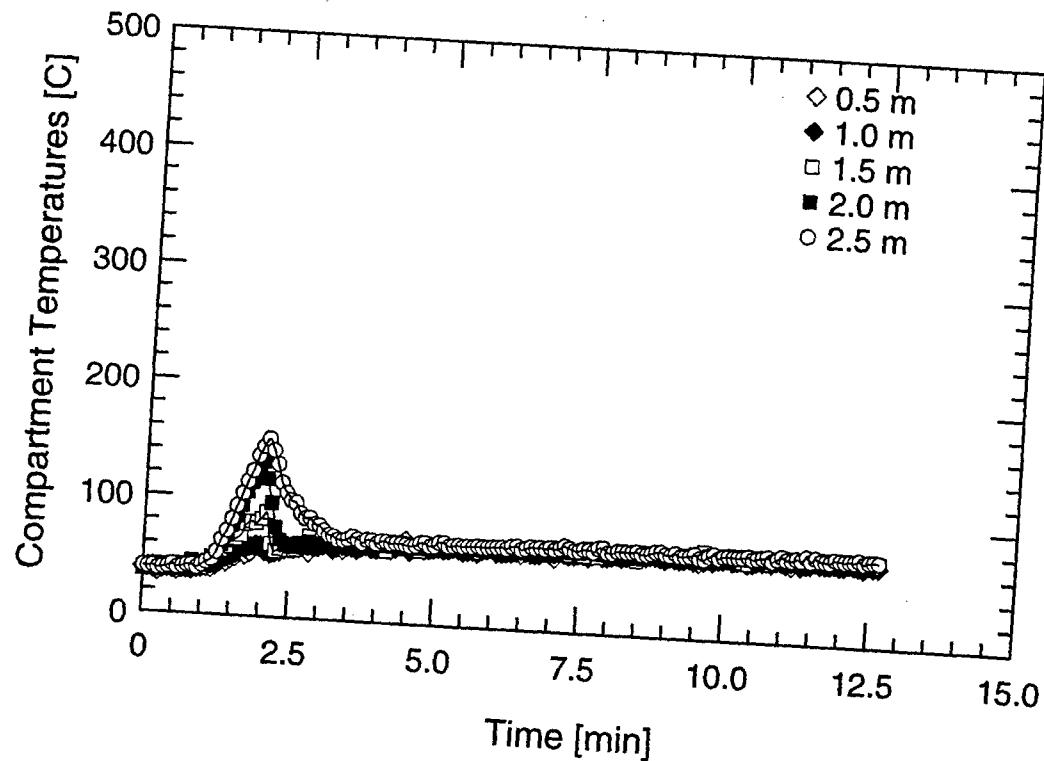
Water Mist System Flow Rate



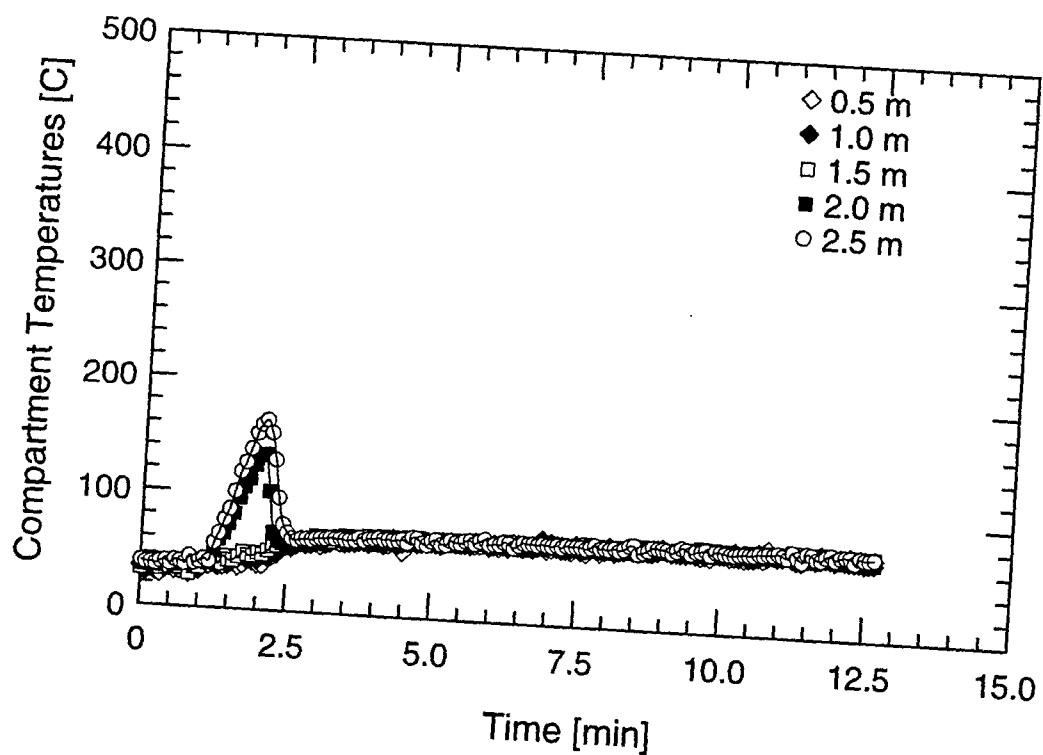
Water Mist System Pressure

TEST #49

B-297



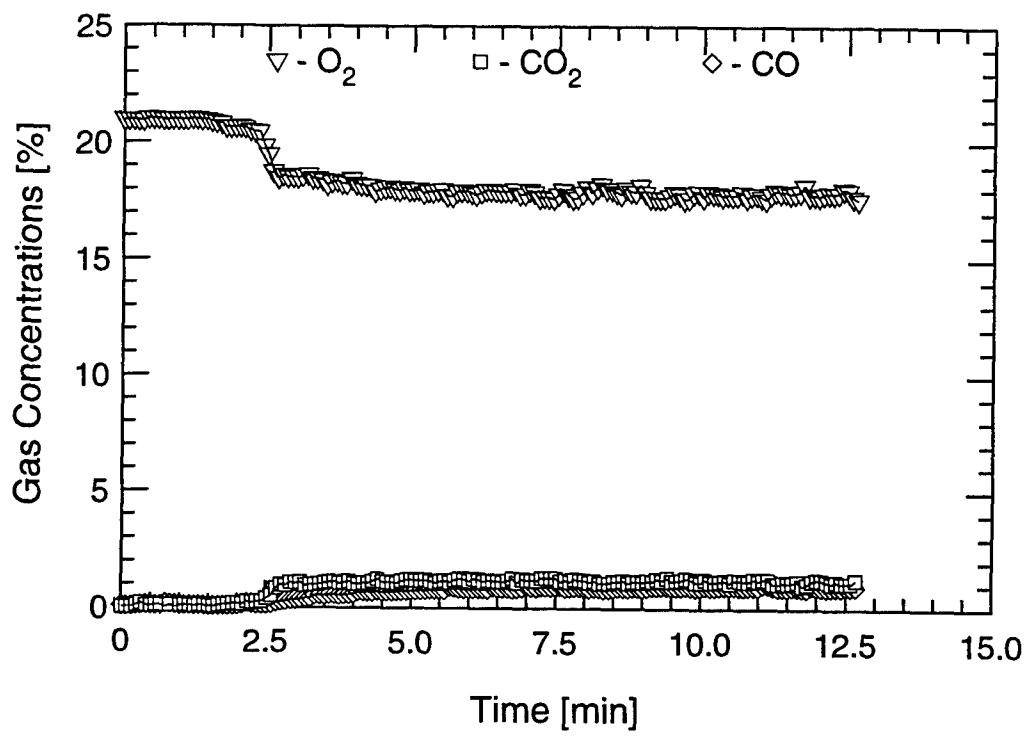
Aft Tree



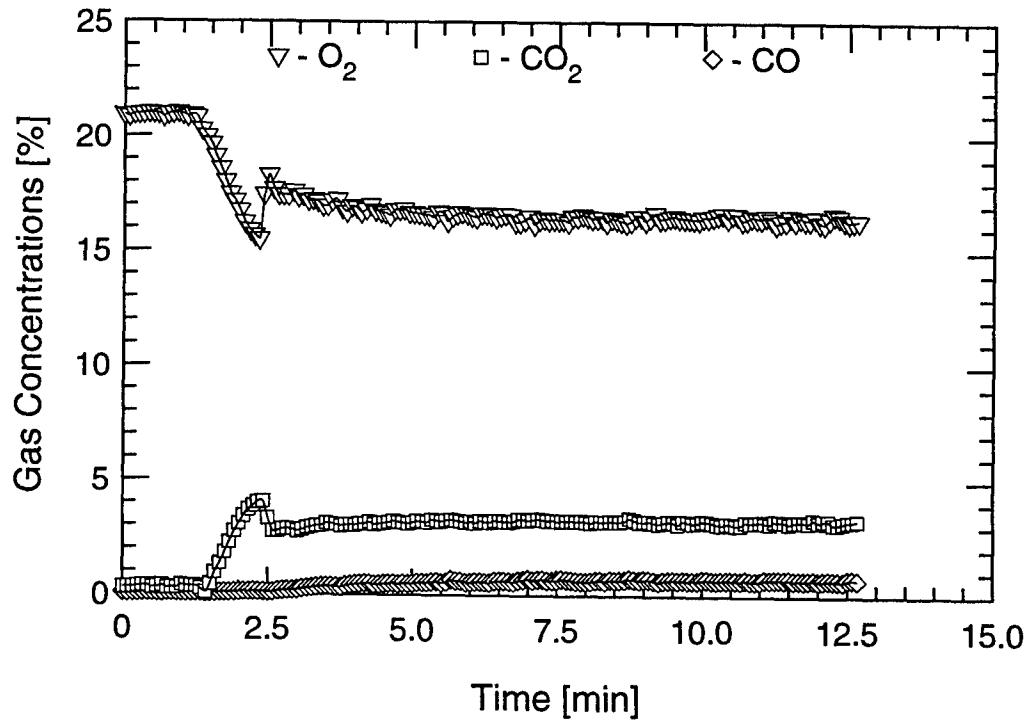
Forward Tree

TEST #50

B-298



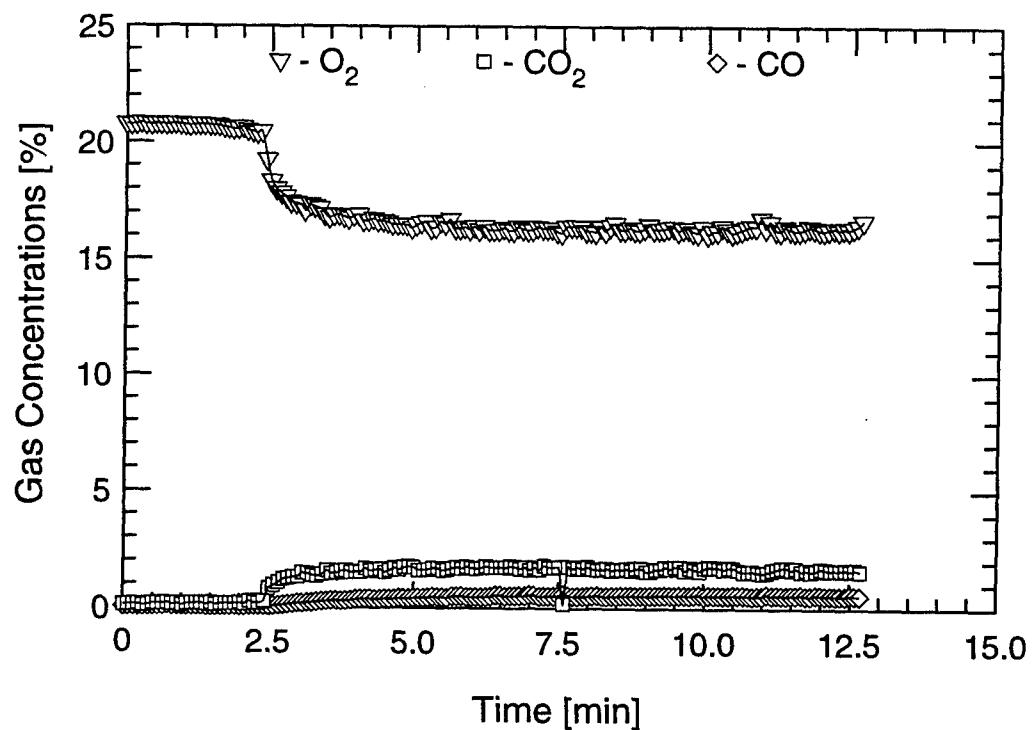
Aft Tree (Low)



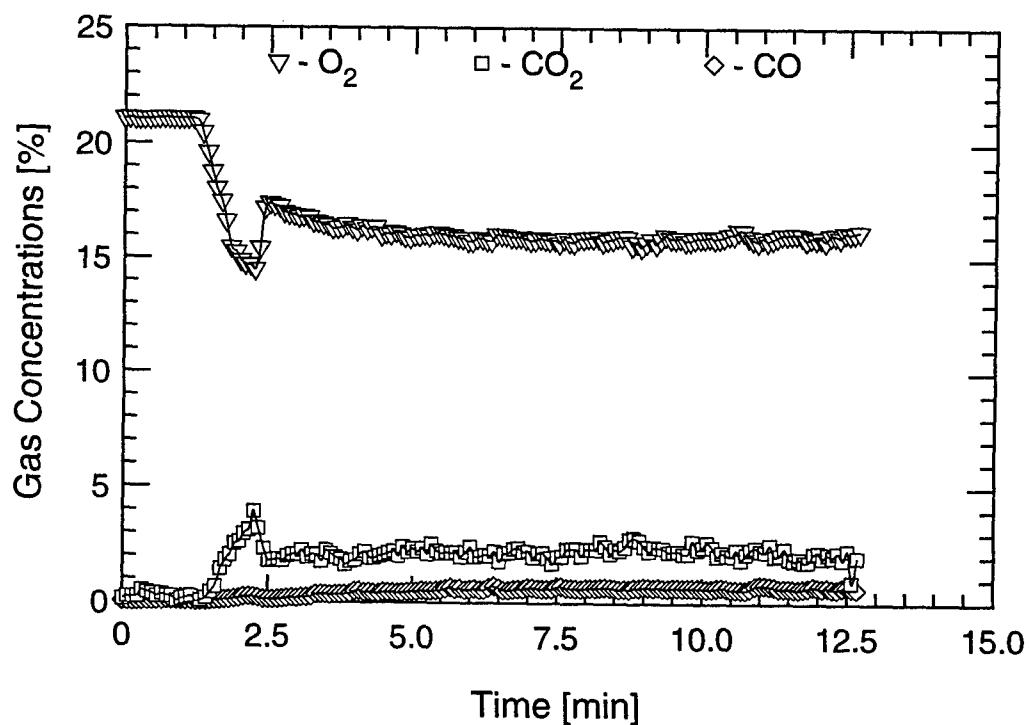
Aft Tree (High)

TEST #50

B-299



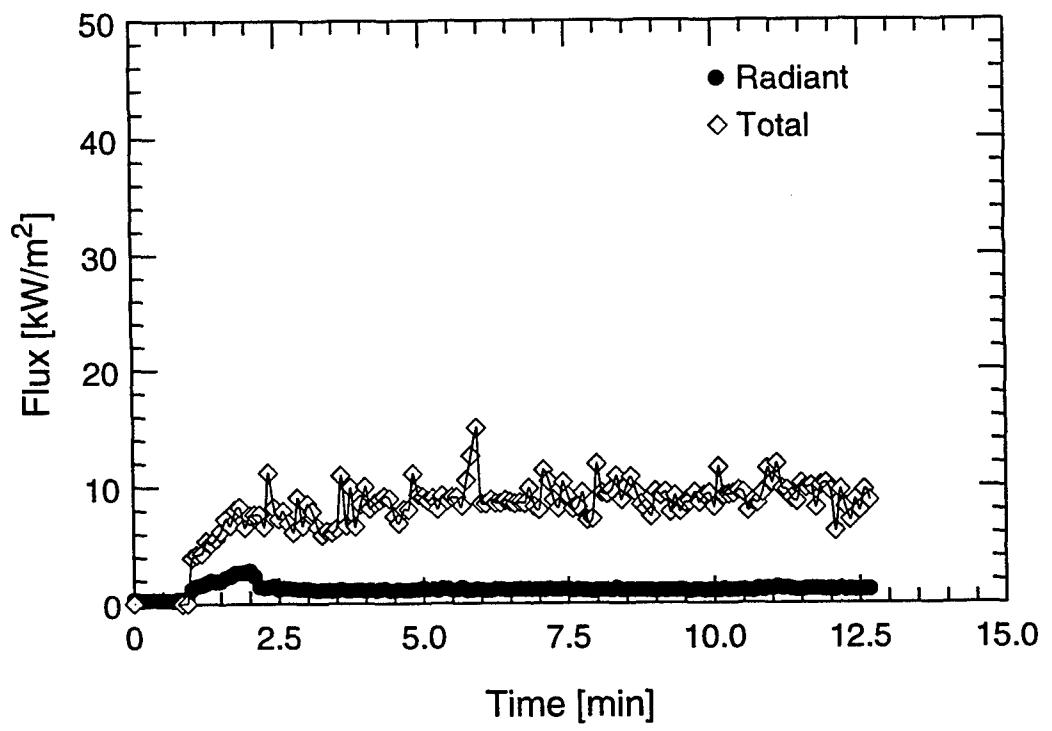
Forward Tree (Low)



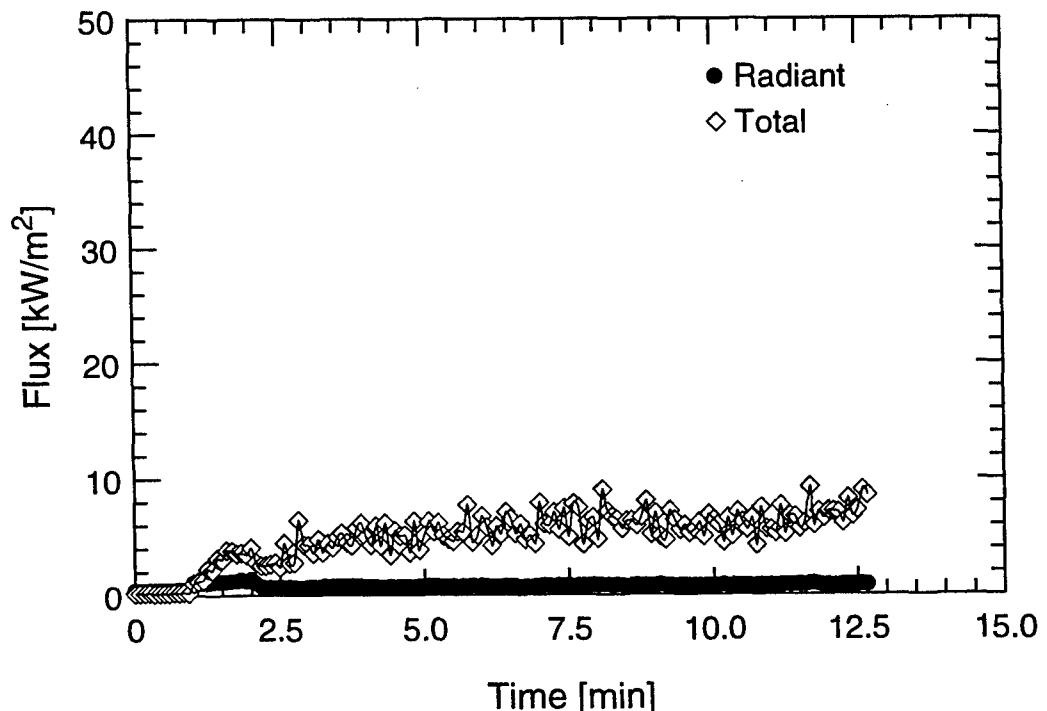
Forward Tree (High)

TEST #50

B-300



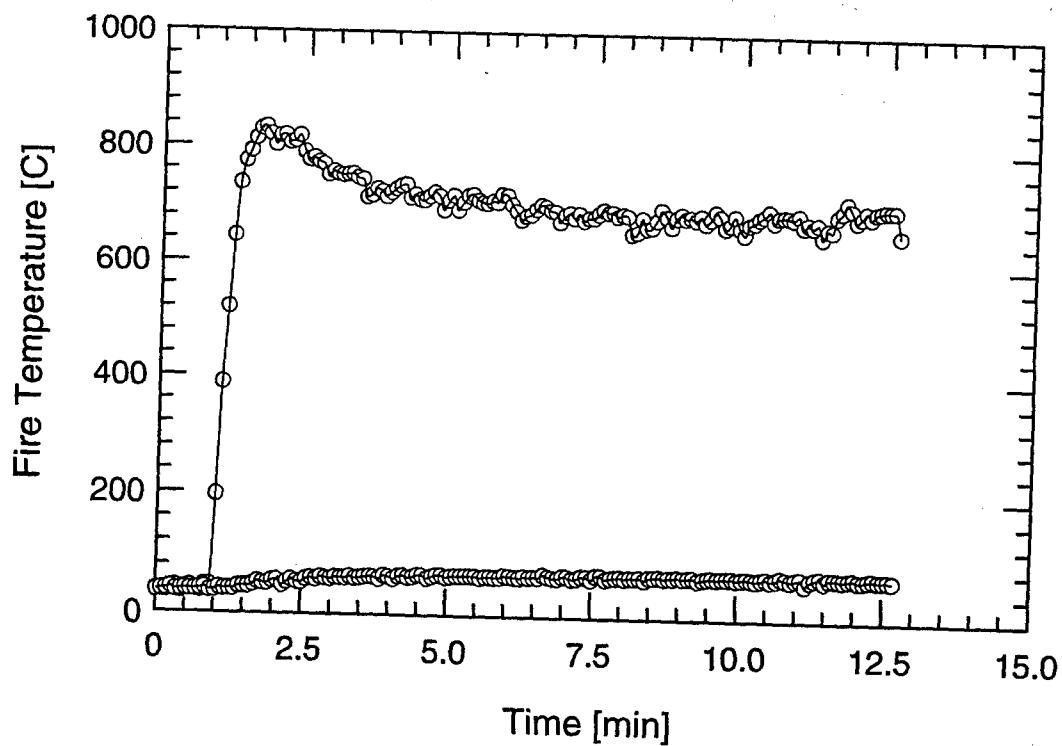
Overhead



Forward Bulkhead

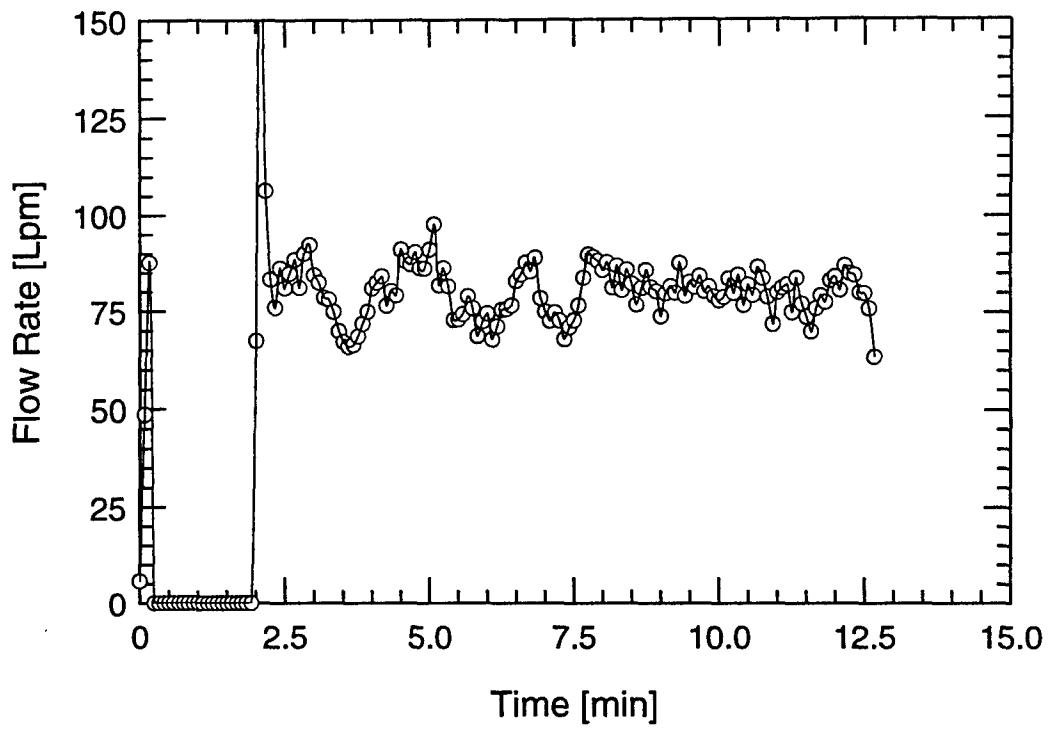
TEST #50

B-301

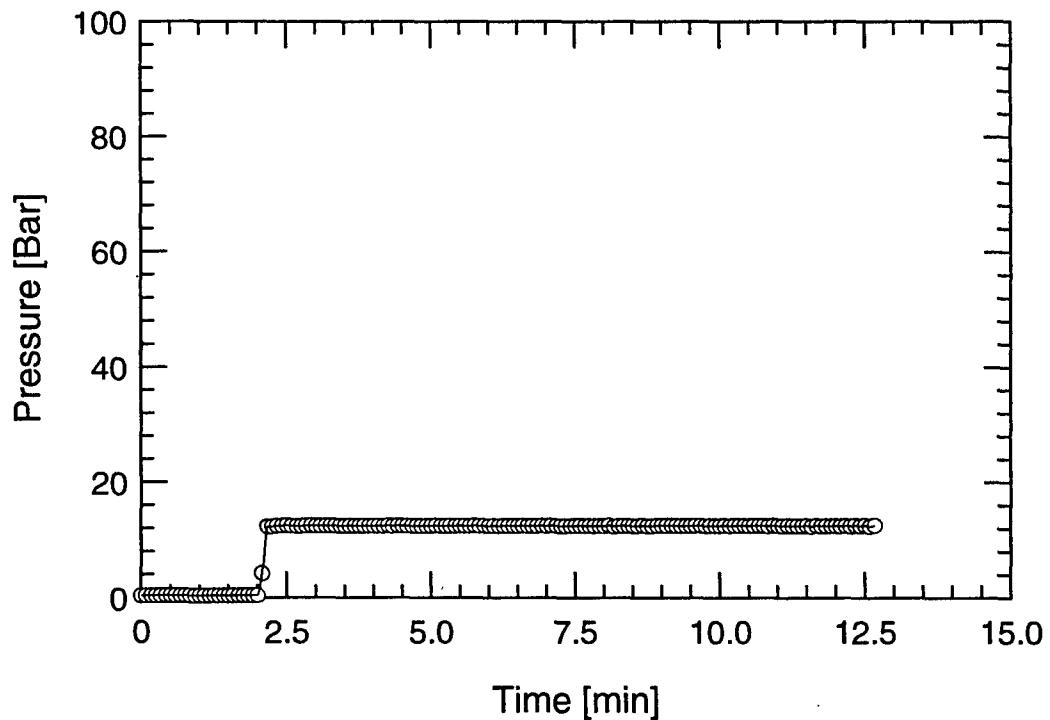


TEST #50

B-302



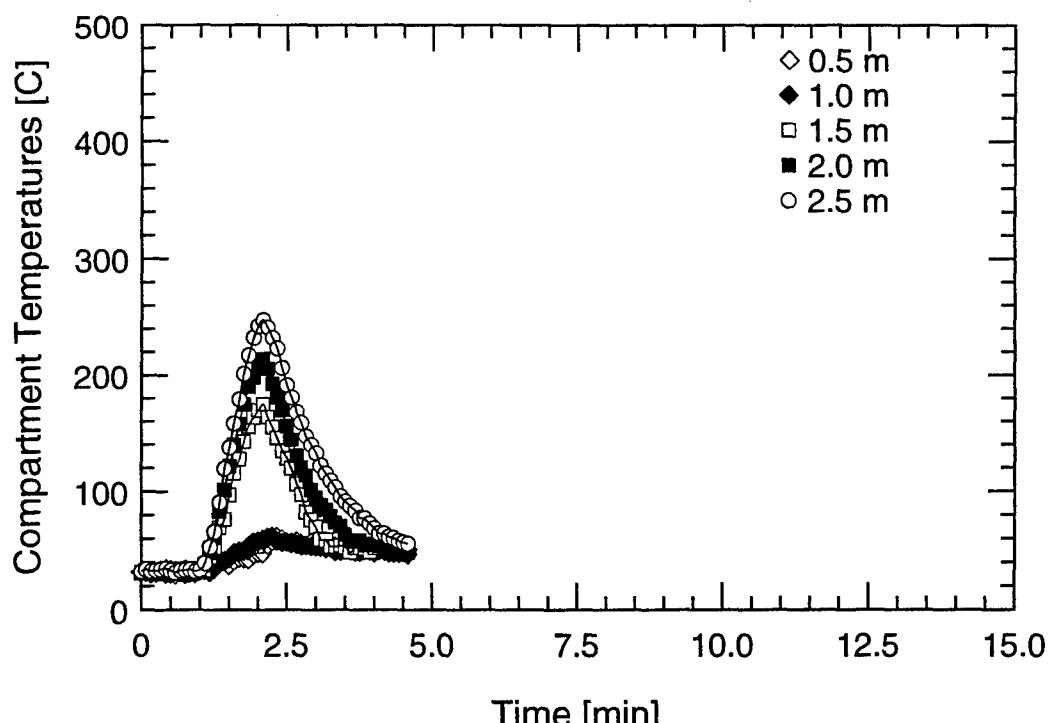
Water Mist System Flow Rate



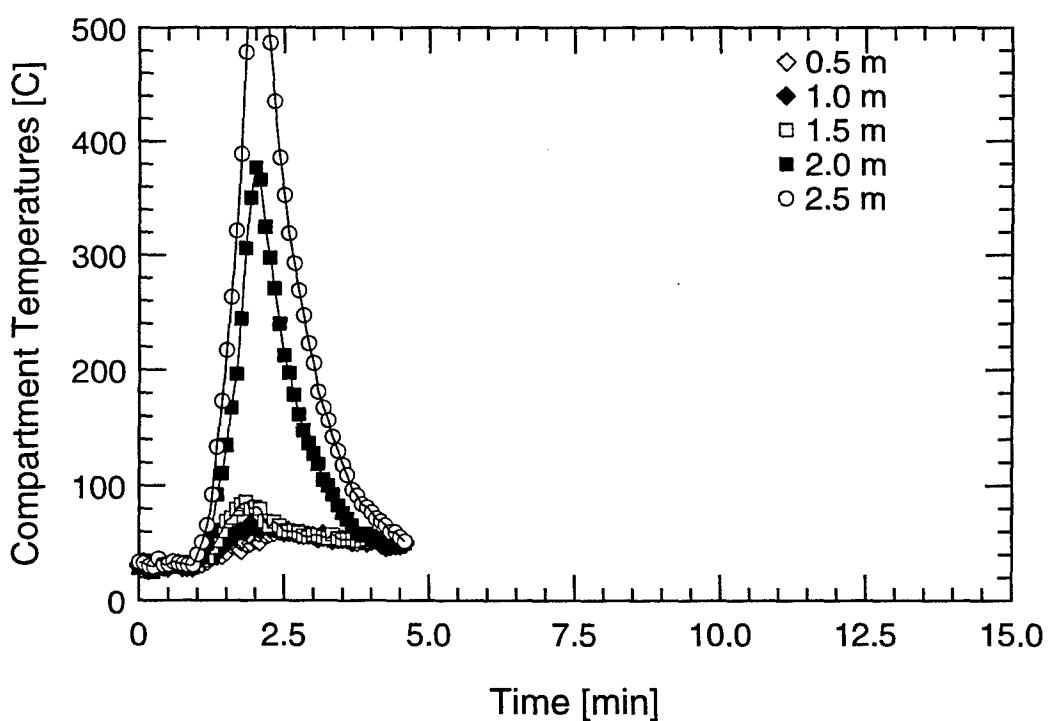
Water Mist System Pressure

TEST #50

B-303



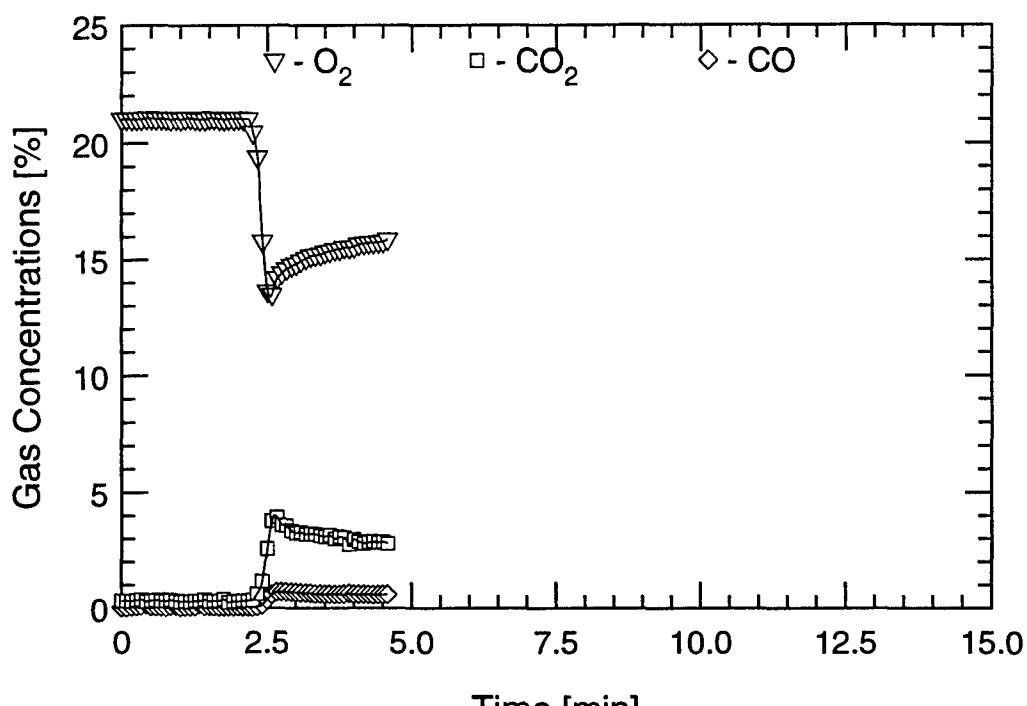
Aft Tree



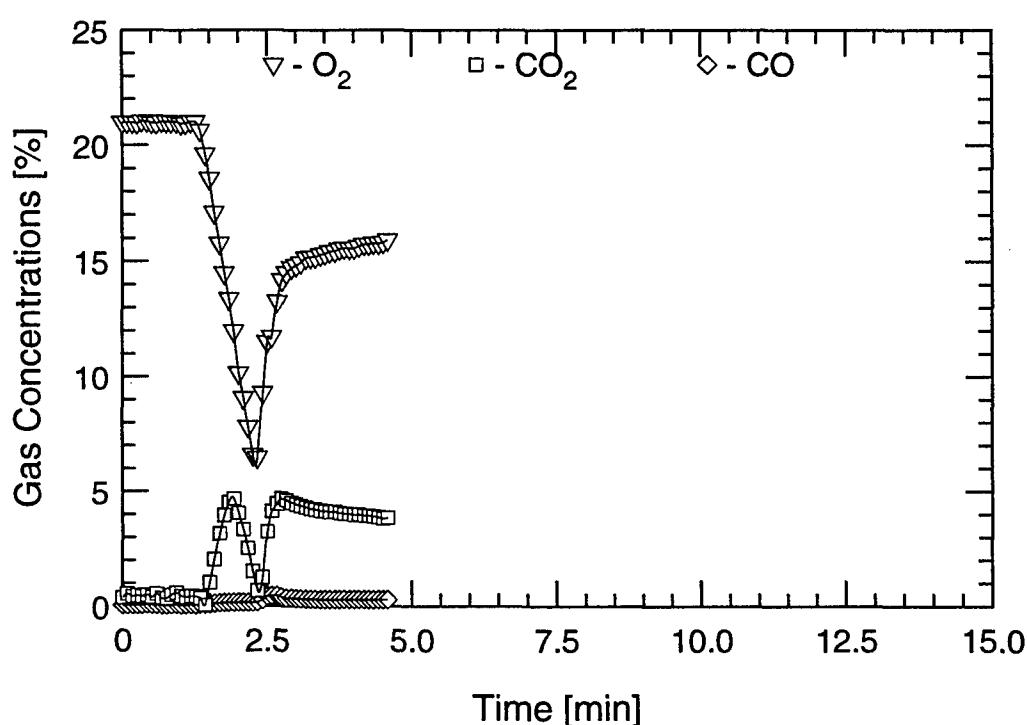
Forward Tree

TEST #51

B-304



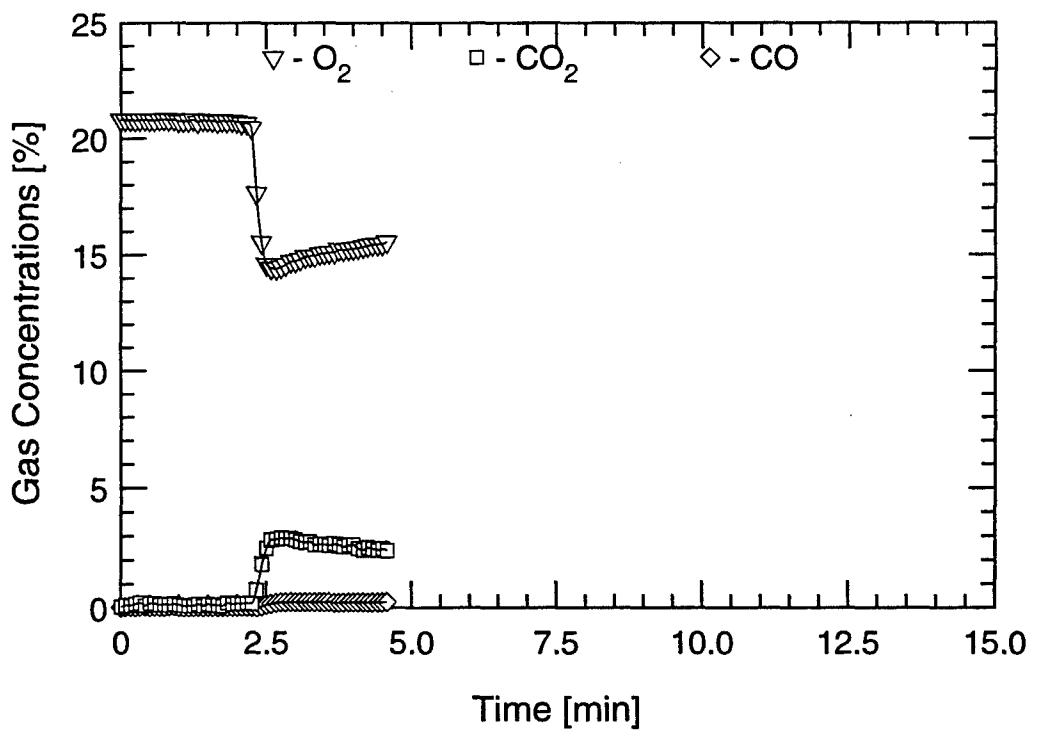
Aft Tree (Low)



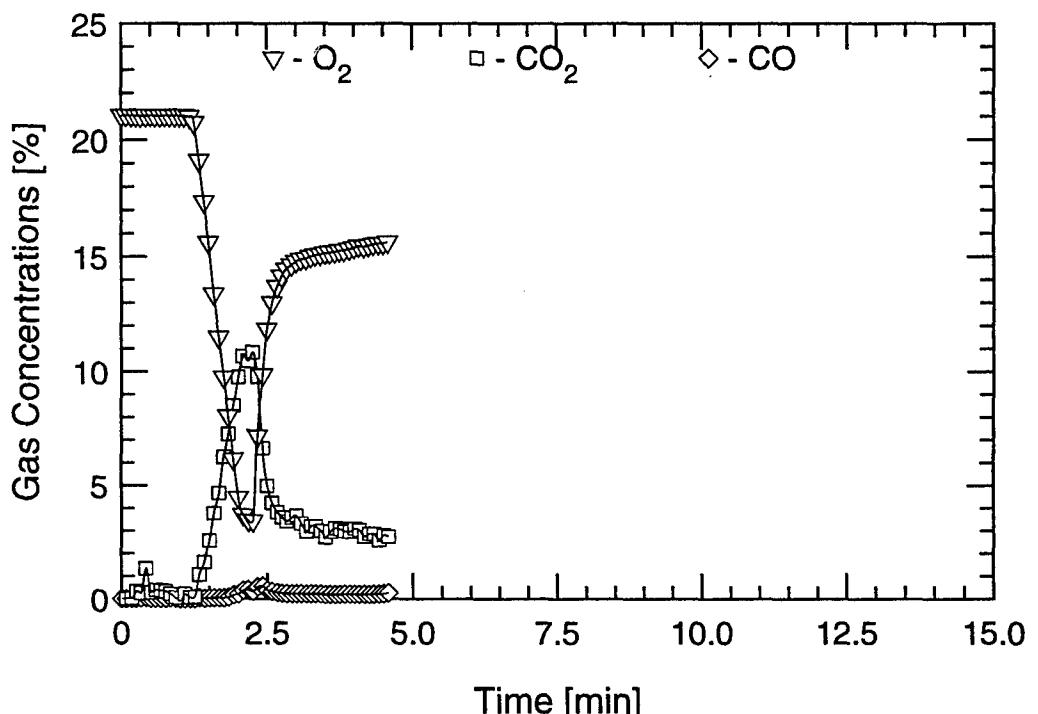
Aft Tree (High)

TEST #51

B-305



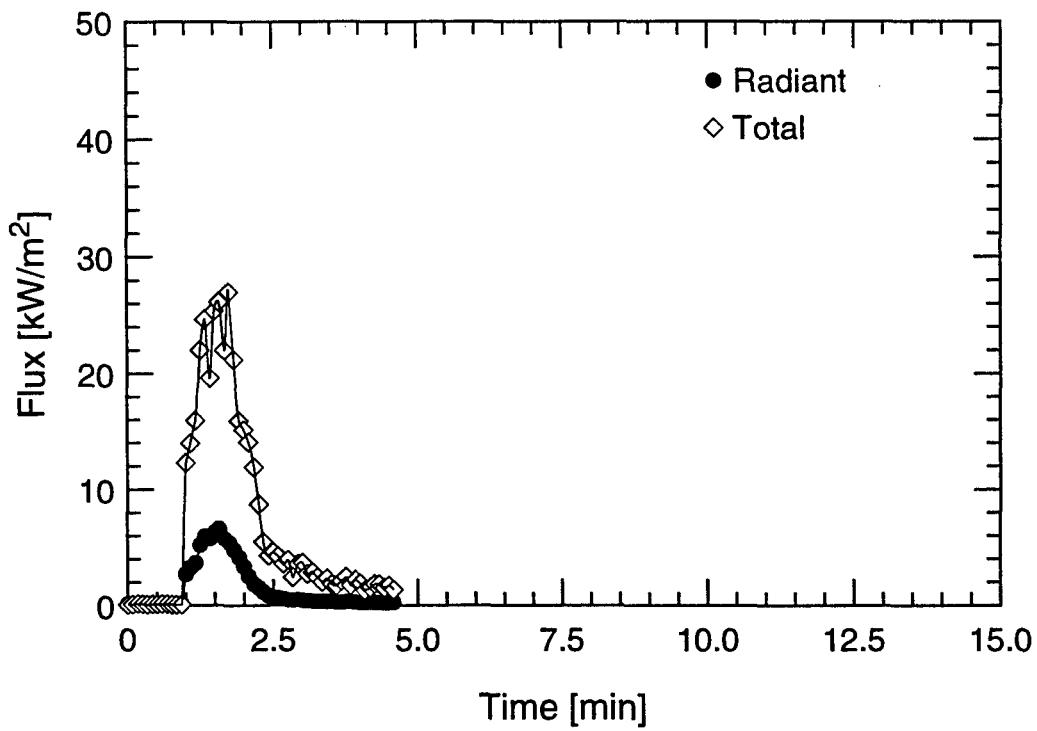
Forward Tree (Low)



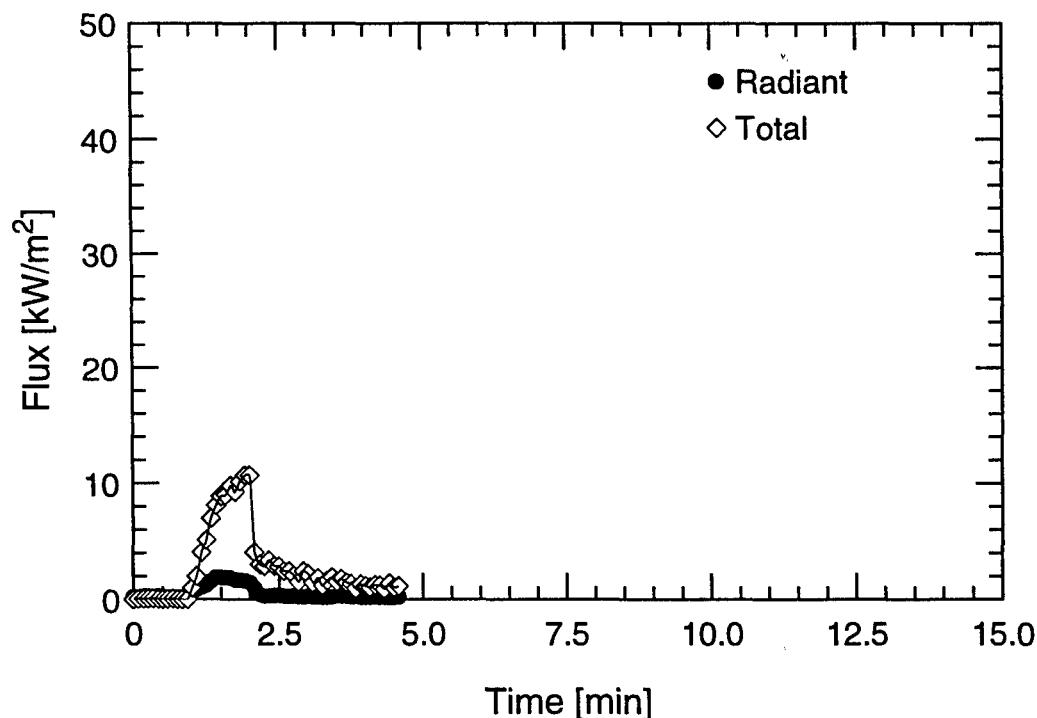
Forward Tree (High)

TEST #51

B-306

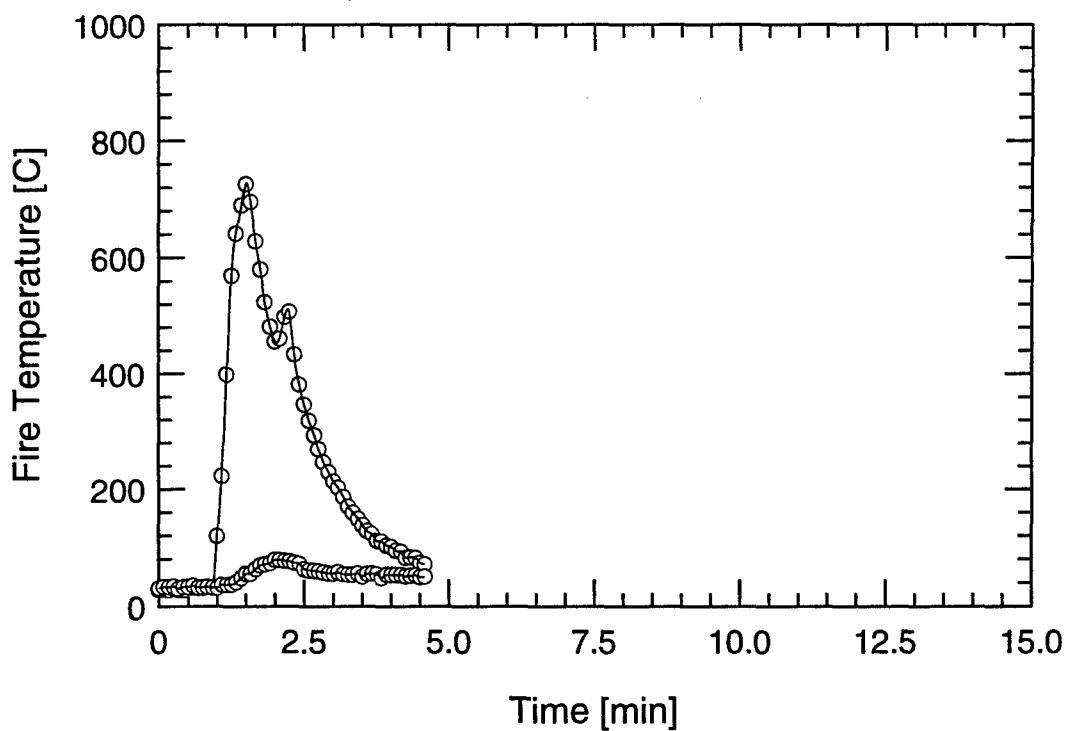


Overhead



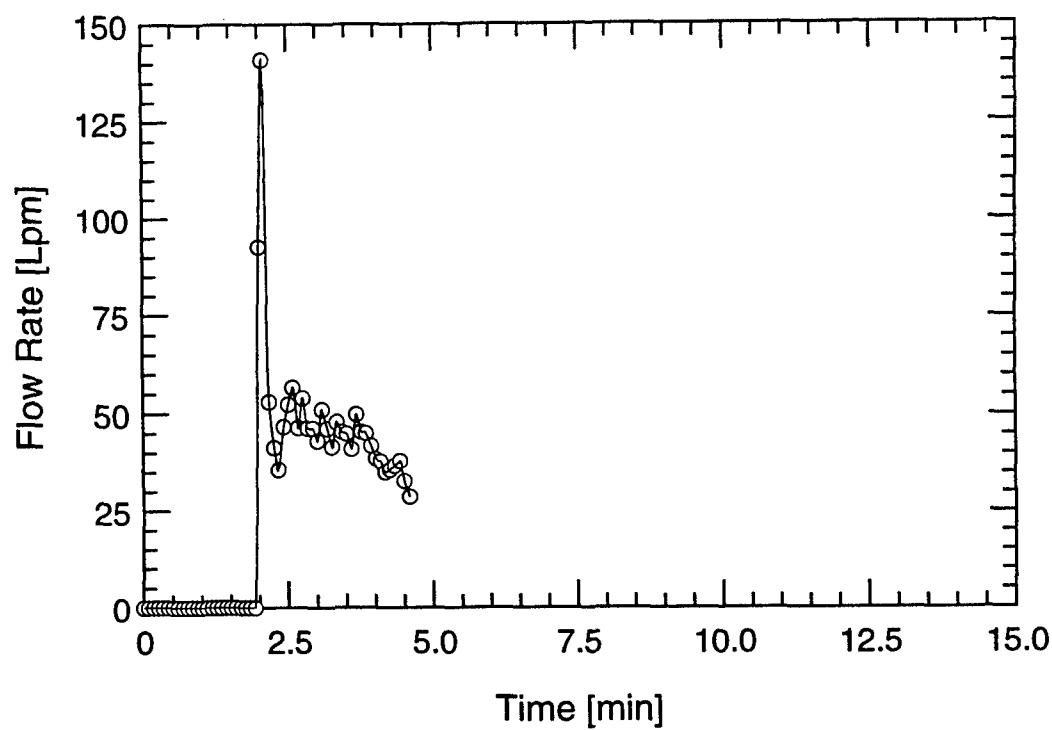
Forward Bulkhead

TEST #51

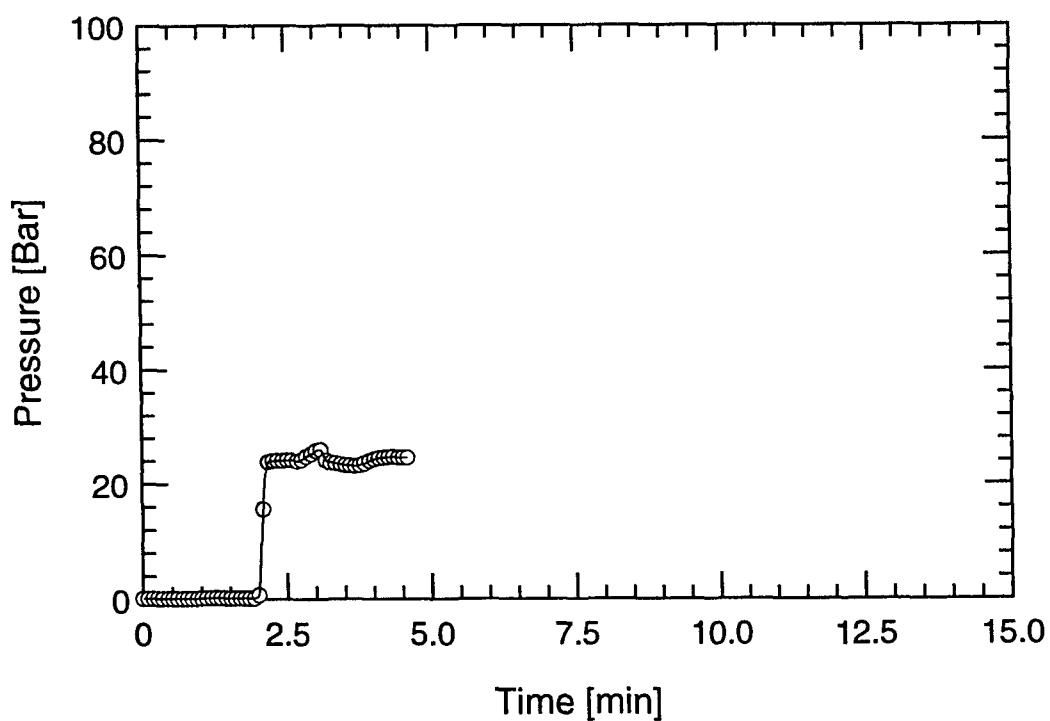


TEST #51

B-308



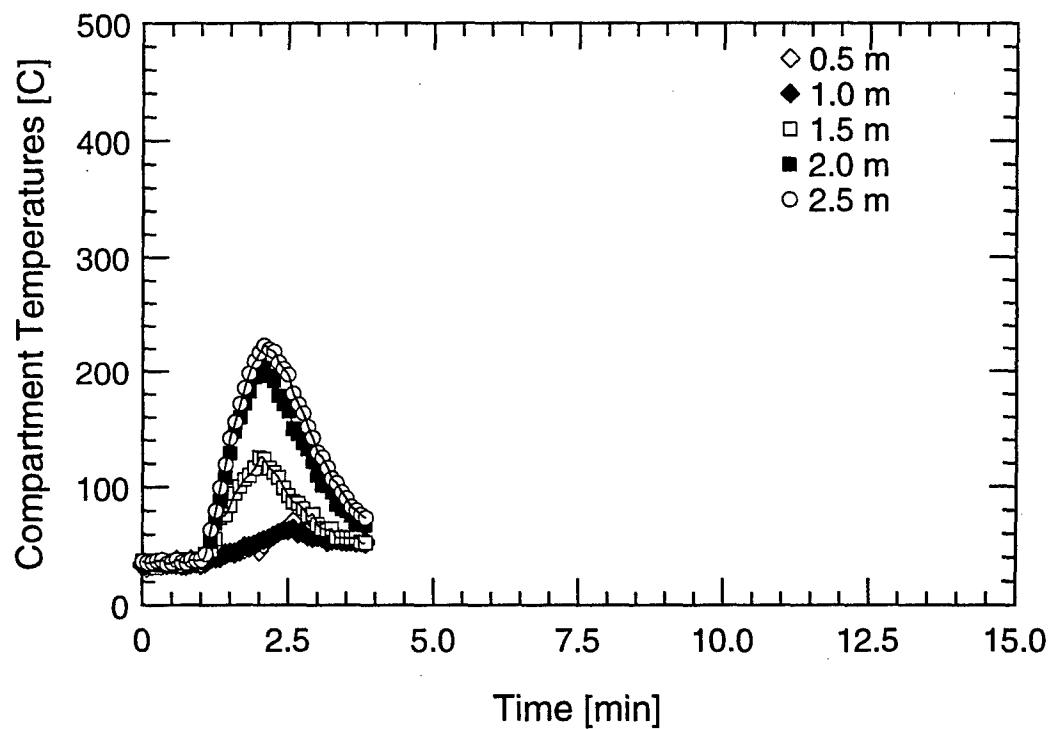
Water Mist System Flow Rate



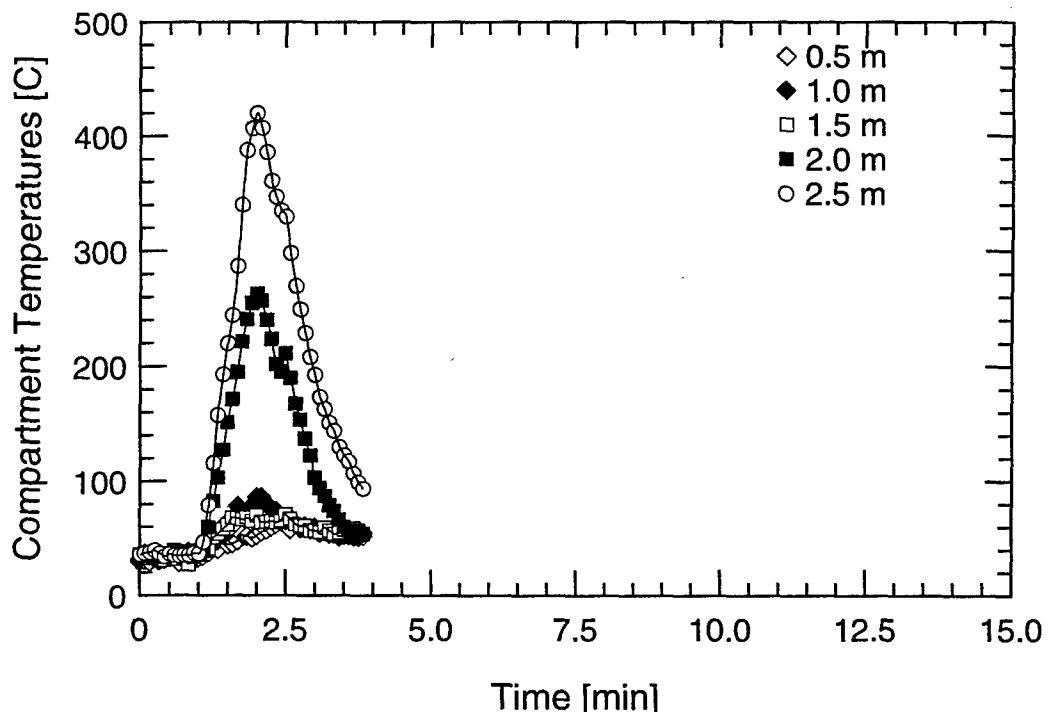
Water Mist System Pressure

TEST #51

B-309



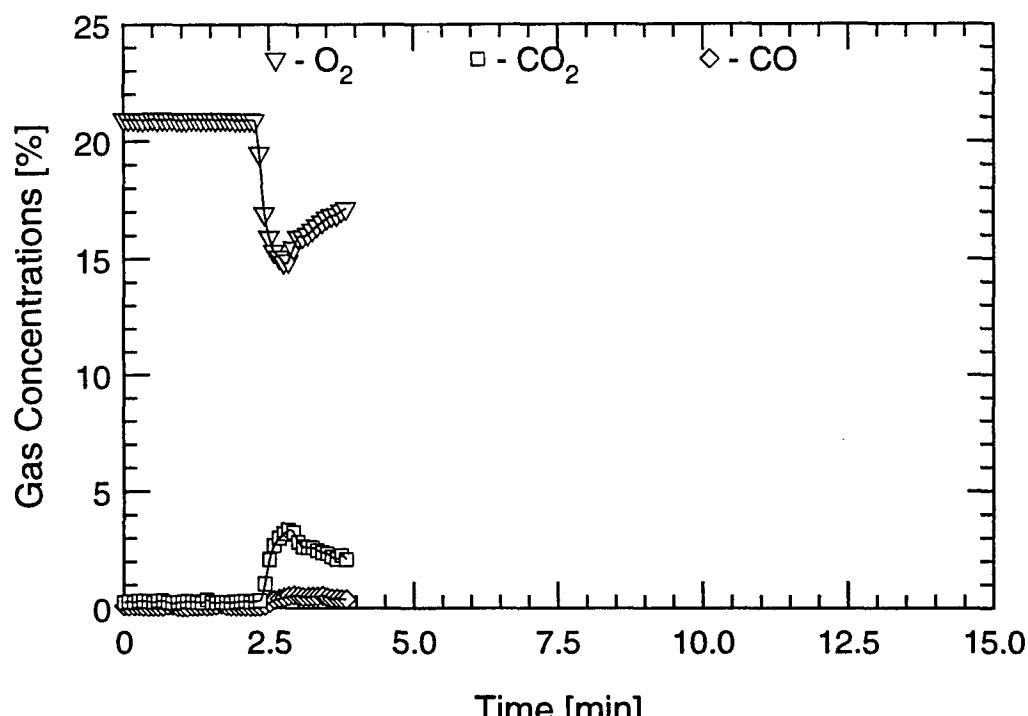
Aft Tree



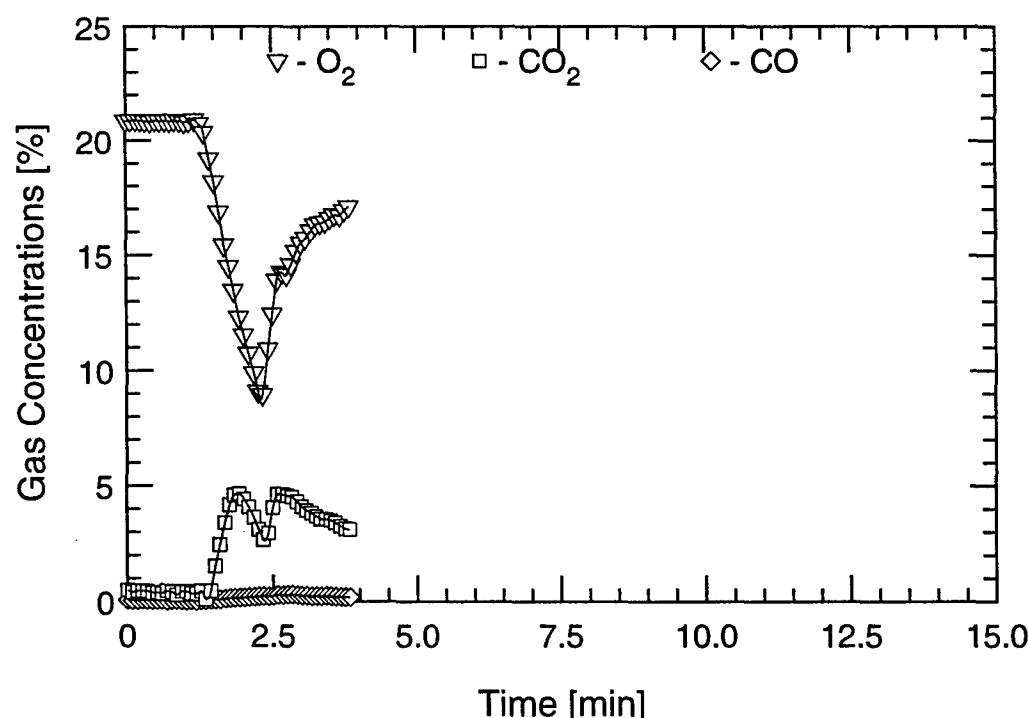
Forward Tree

TEST #52

B-310



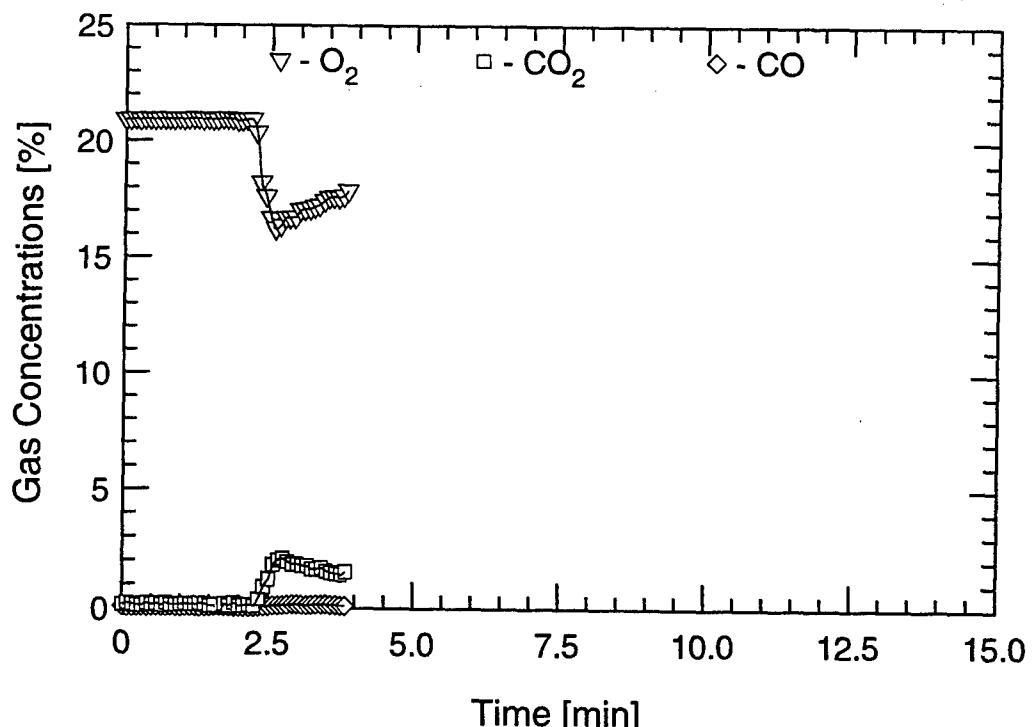
Aft Tree (Low)



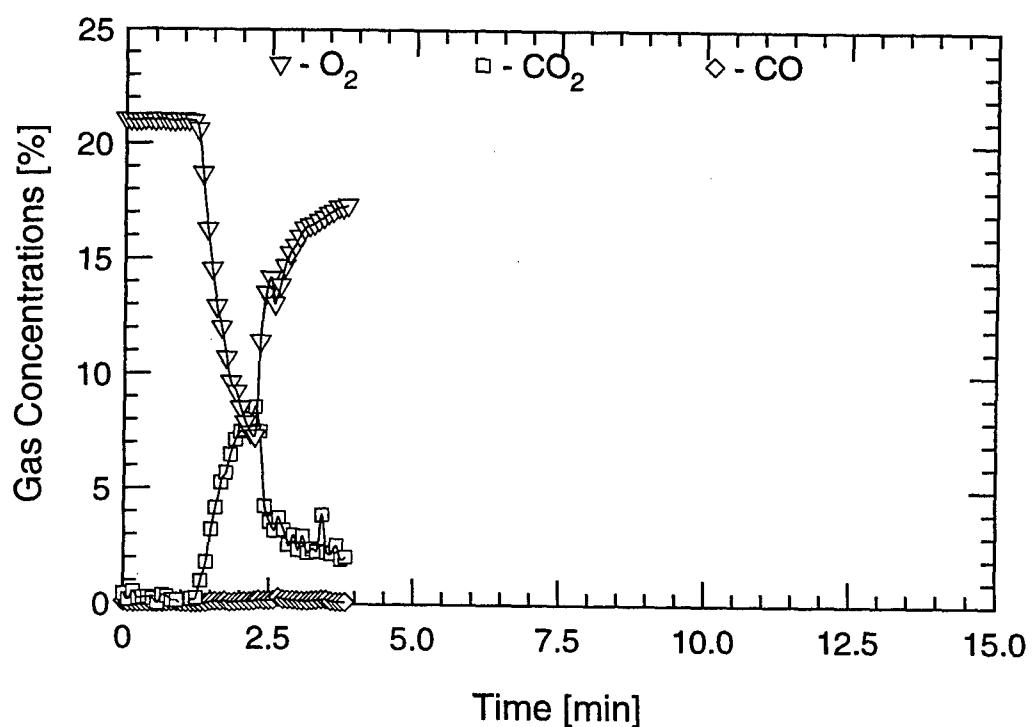
Aft Tree (High)

TEST #52

B-311



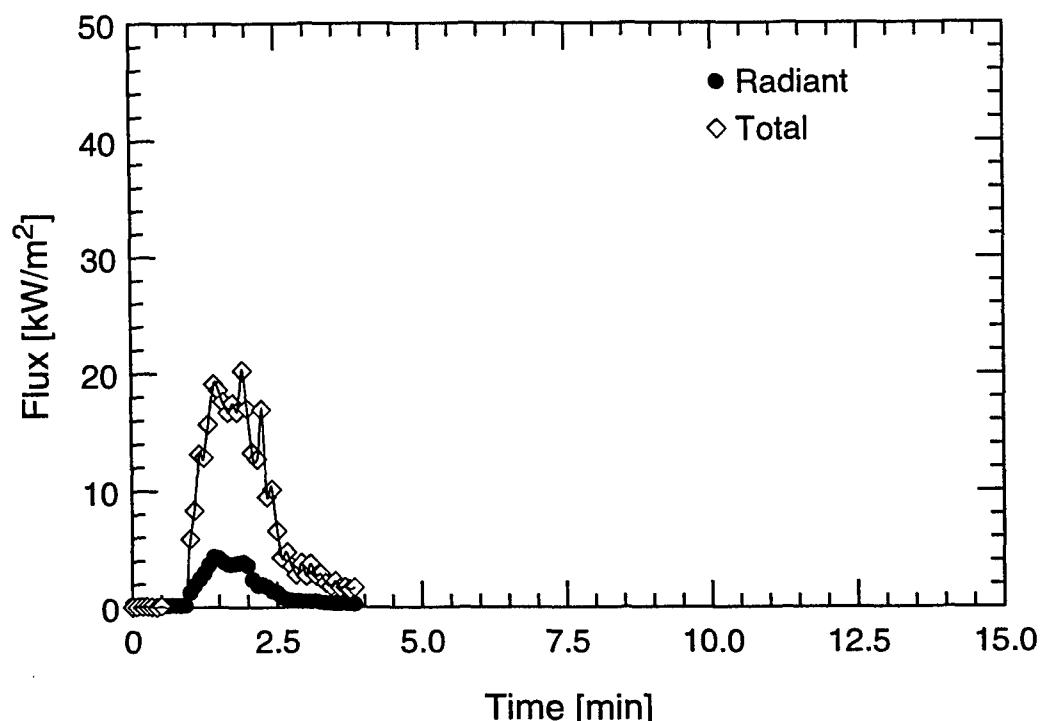
Forward Tree (Low)



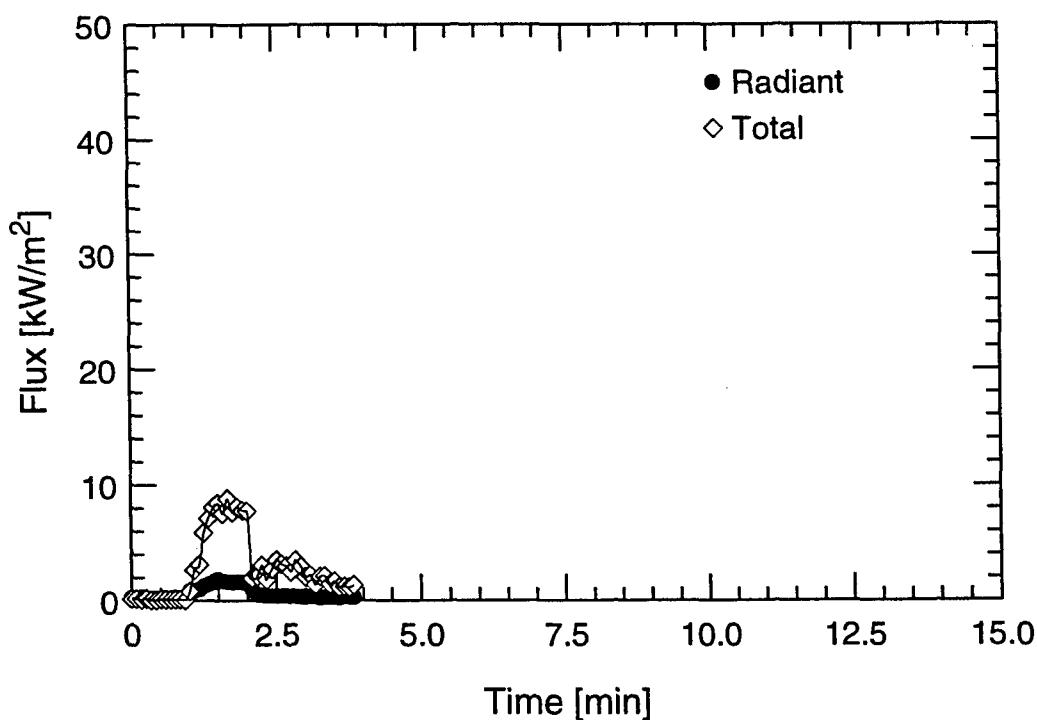
Forward Tree (High)

TEST #52

B-3I2



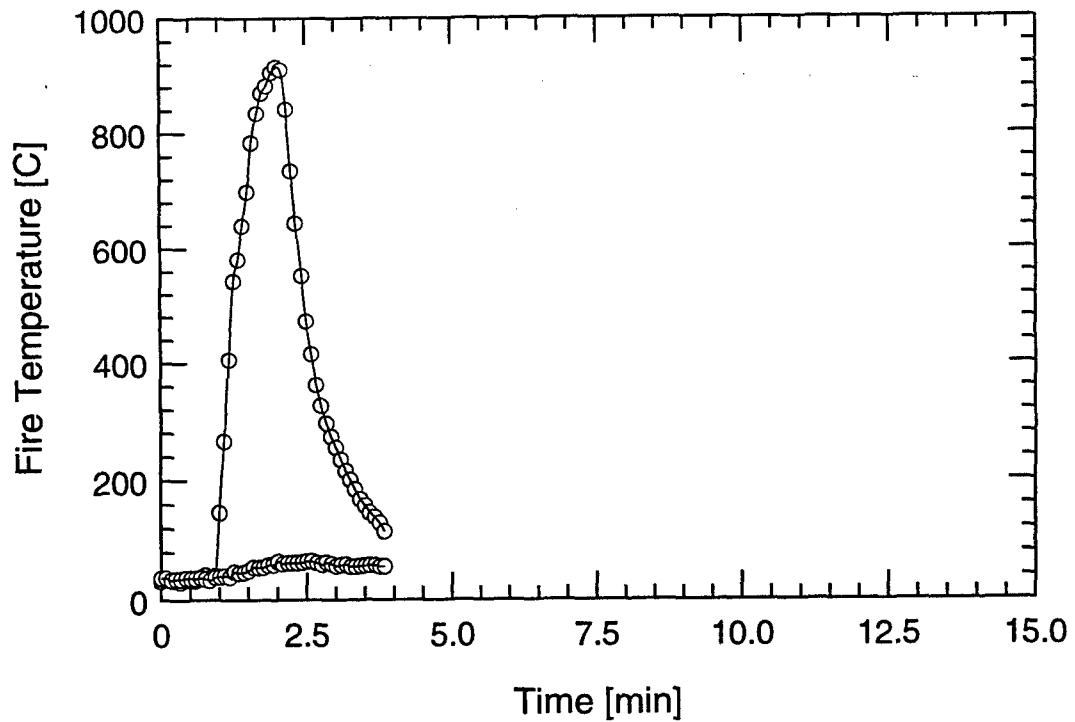
Overhead



Forward Bulkhead

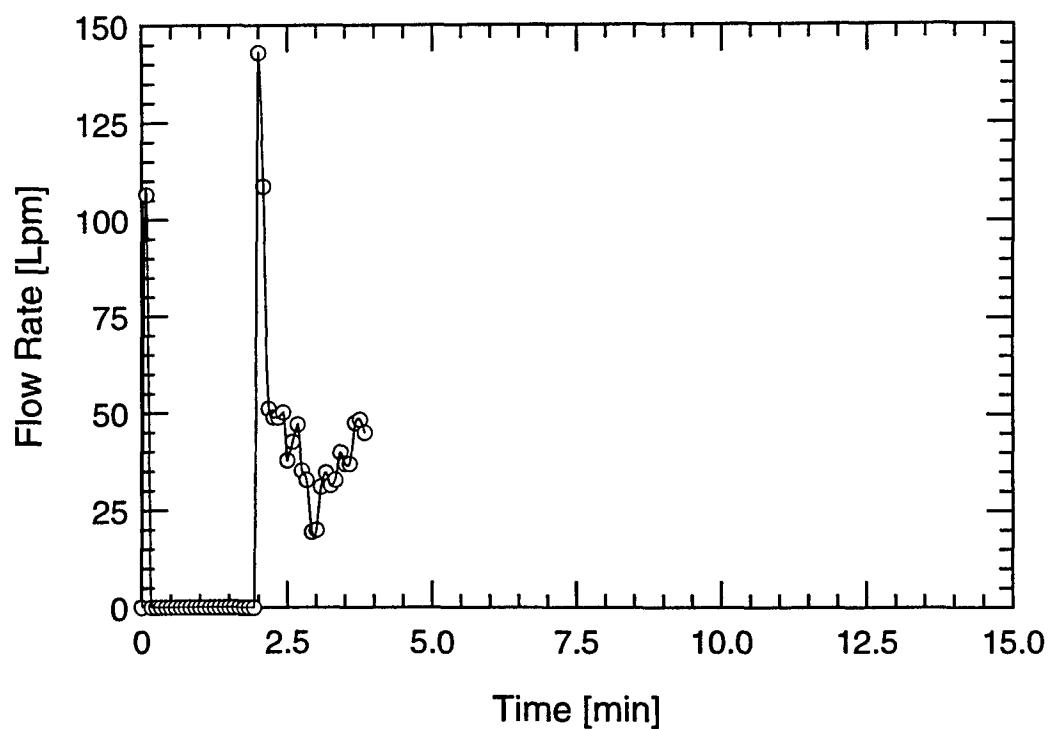
TEST #52

B-313

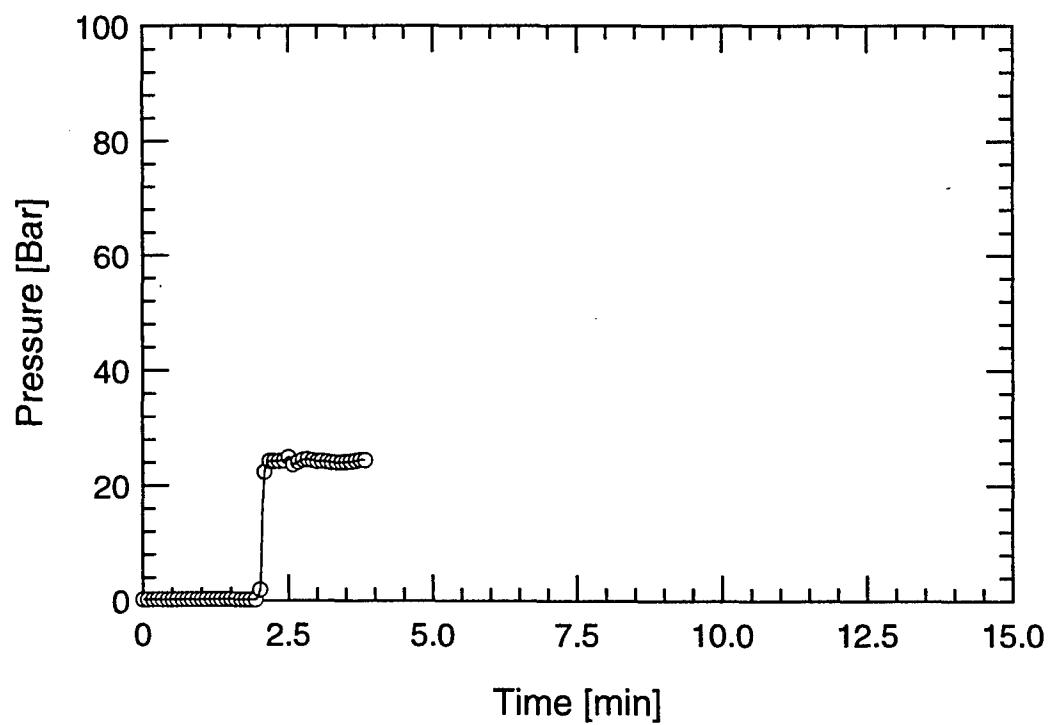


TEST #52

B-314



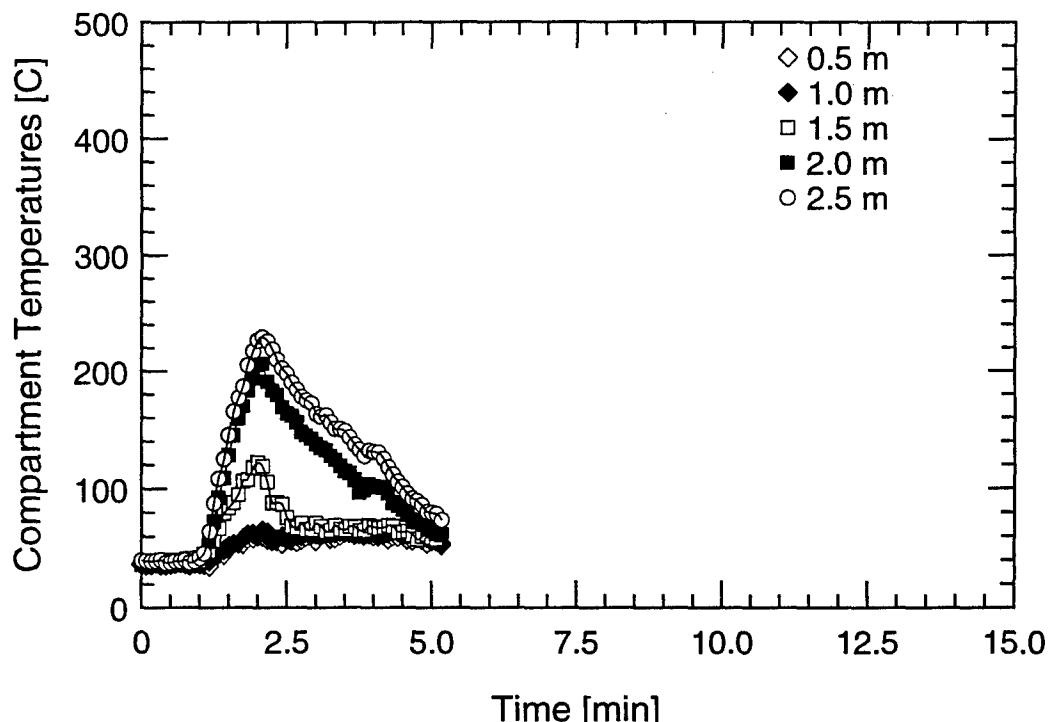
Water Mist System Flow Rate



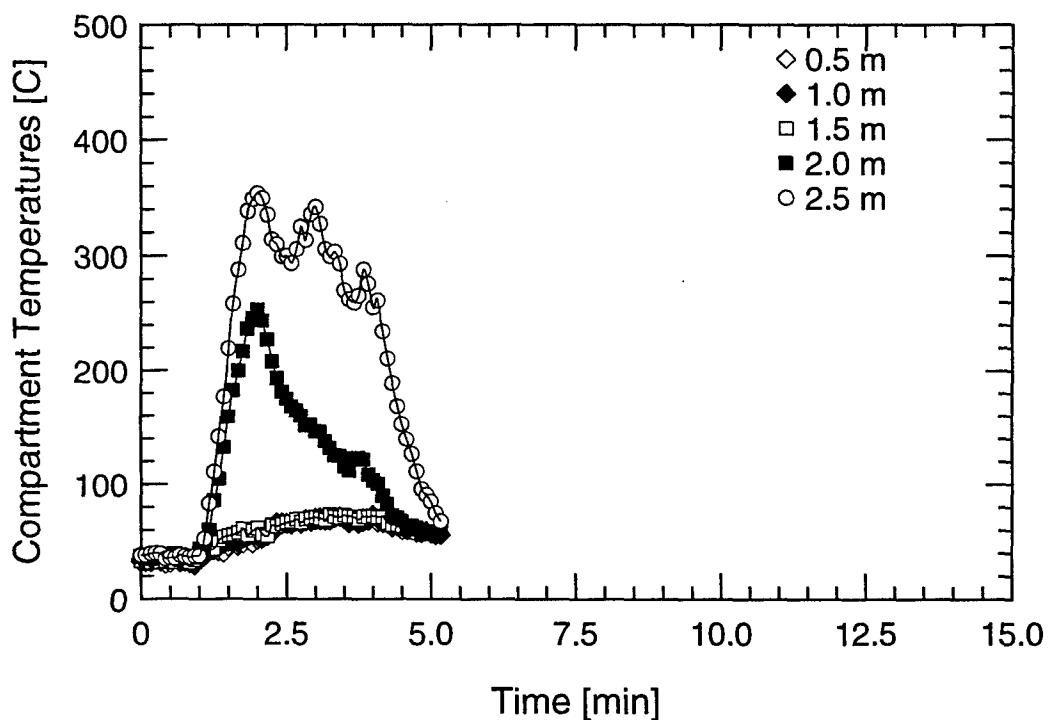
Water Mist System Pressure

TEST #52

B-315



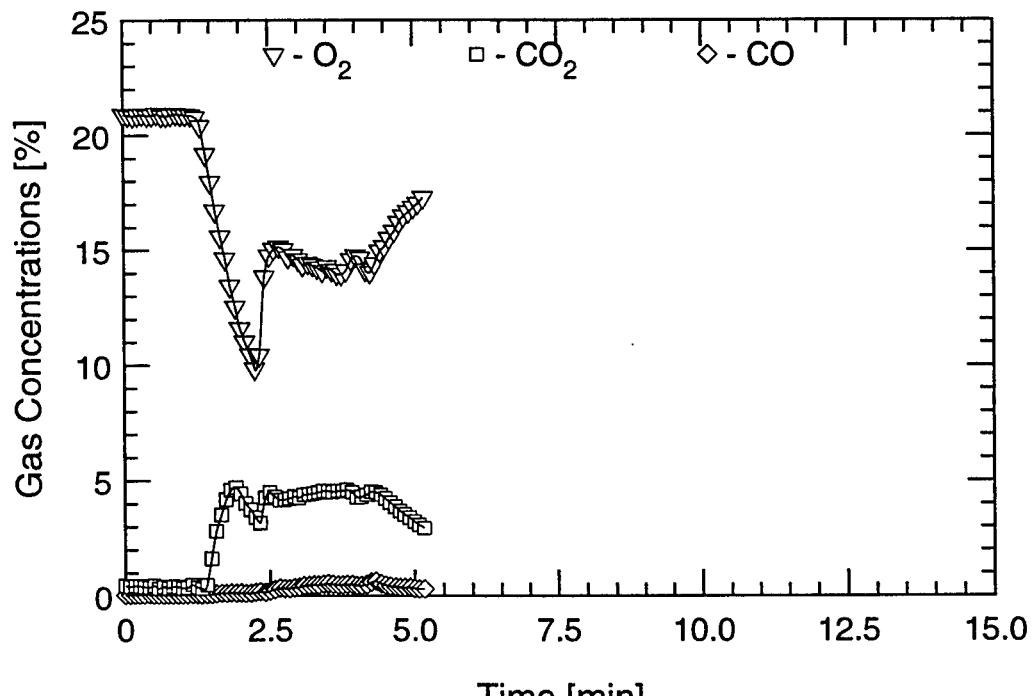
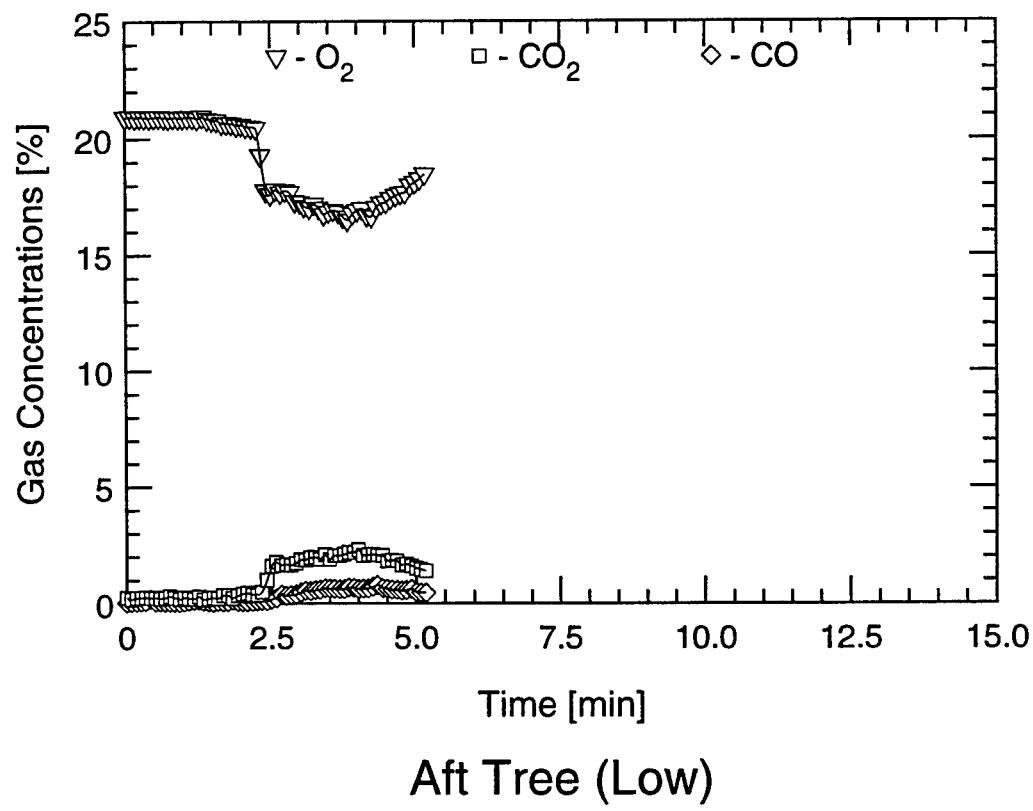
Aft Tree



Forward Tree

TEST #53

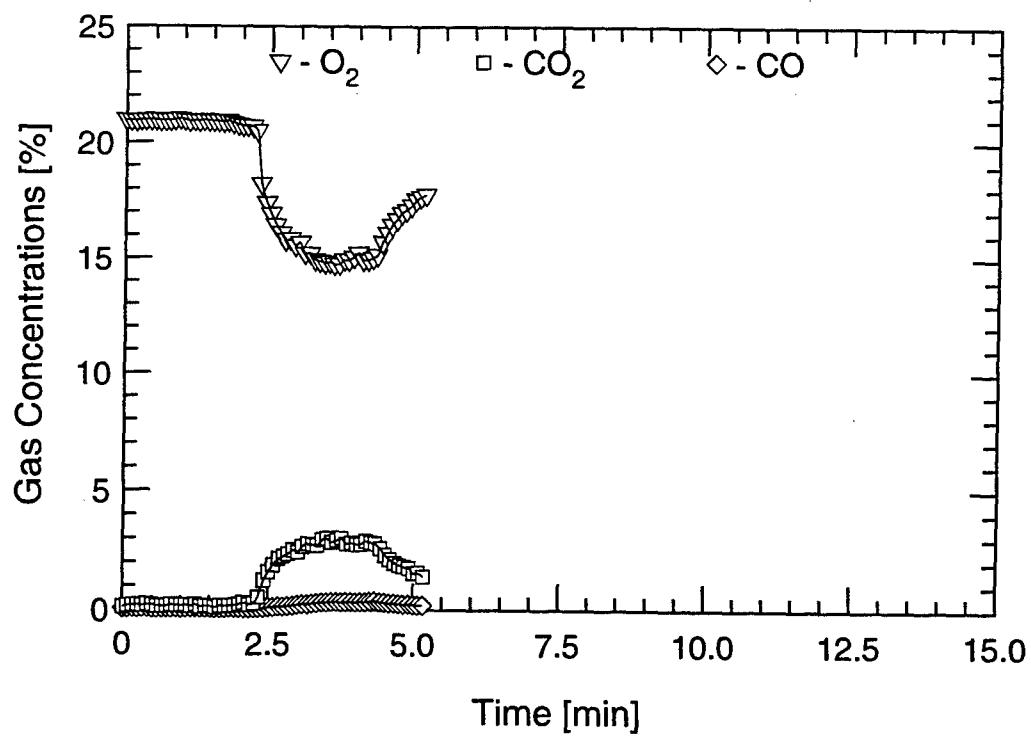
B-316



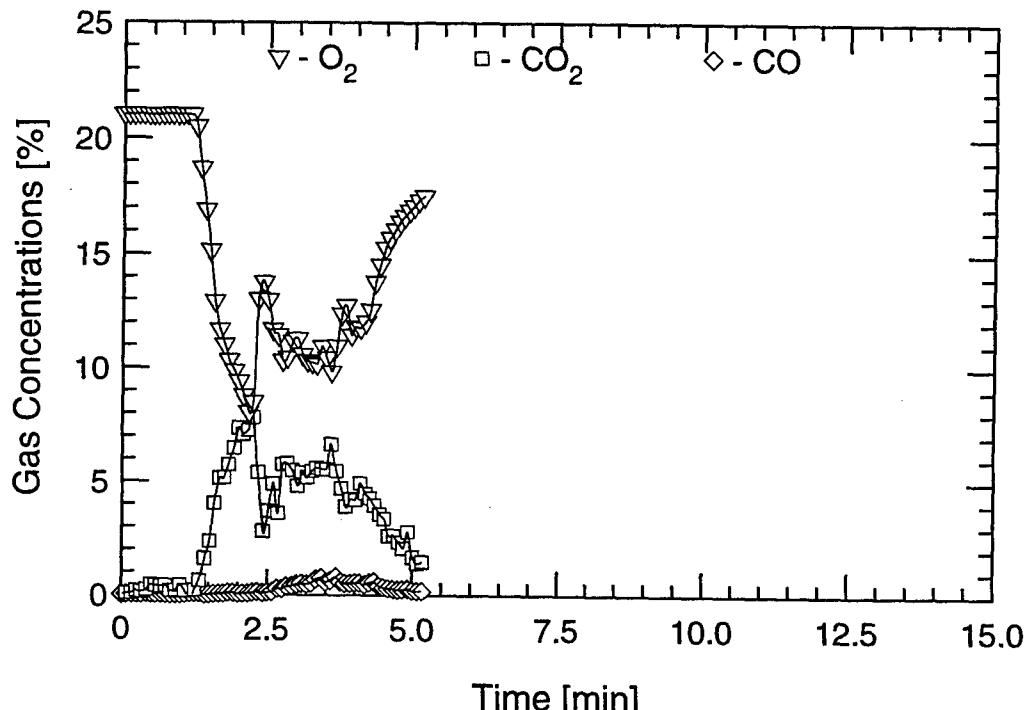
Aft Tree (High)

TEST #53

B-317



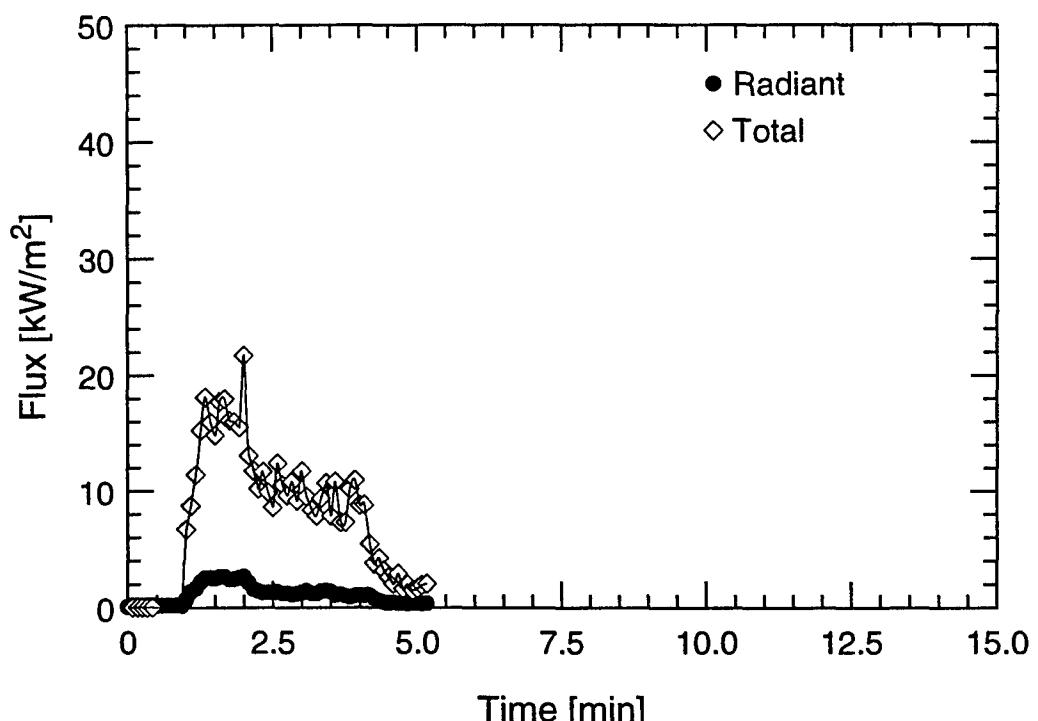
Forward Tree (Low)



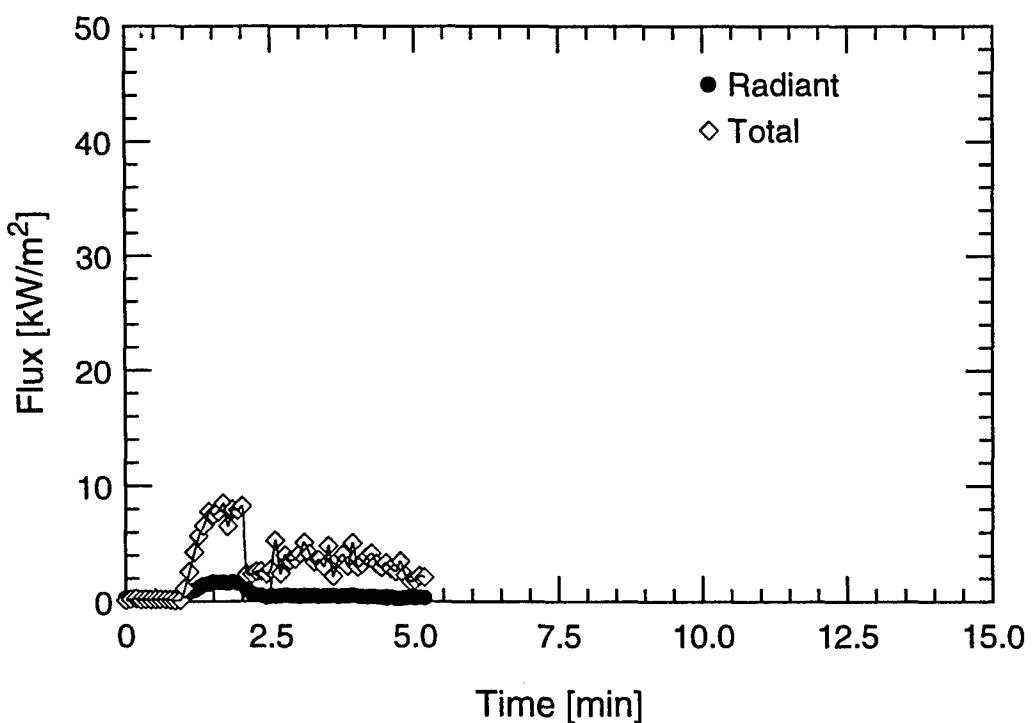
Forward Tree (High)

TEST #53

B-318



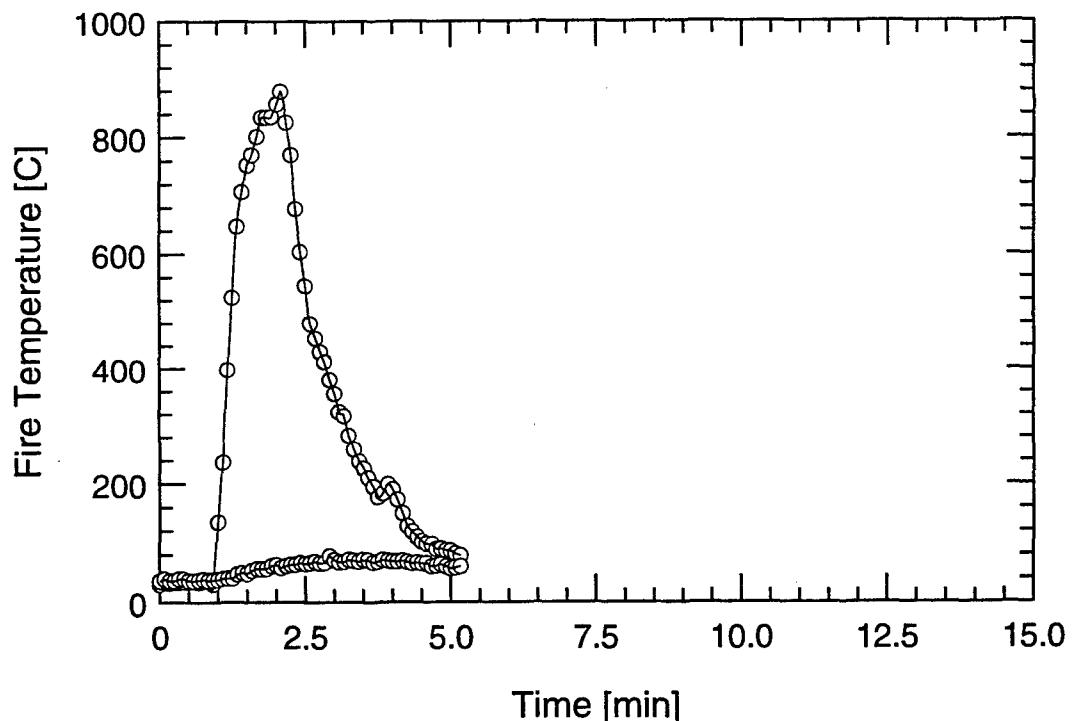
Overhead



Forward Bulkhead

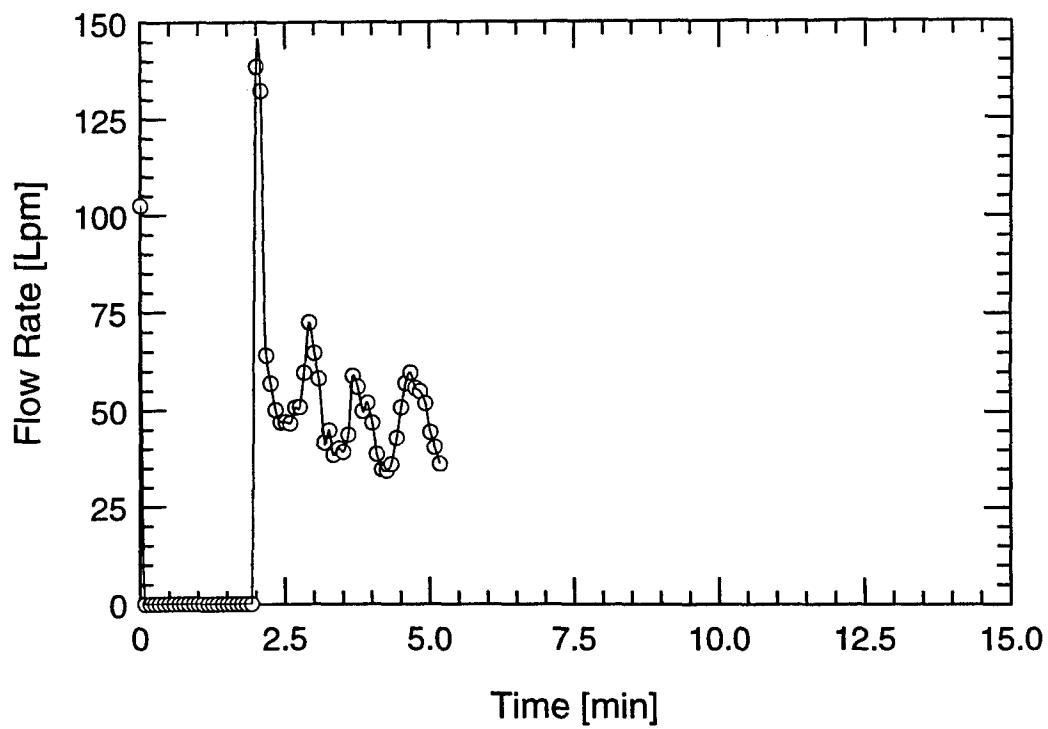
TEST #53

B-319

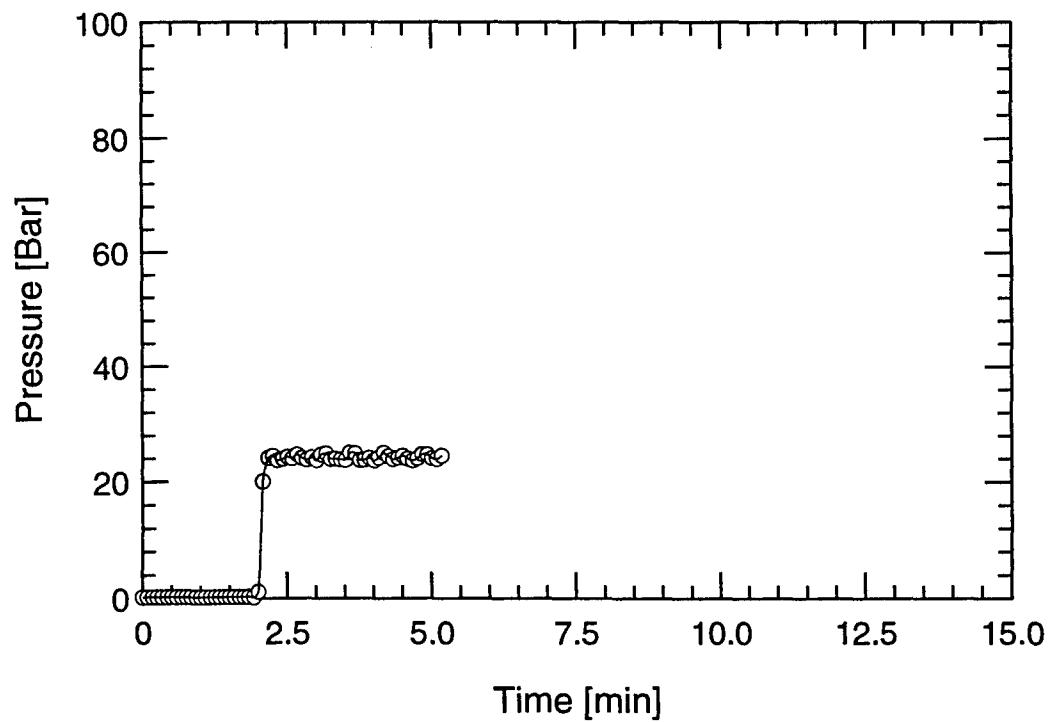


TEST #53

B-320



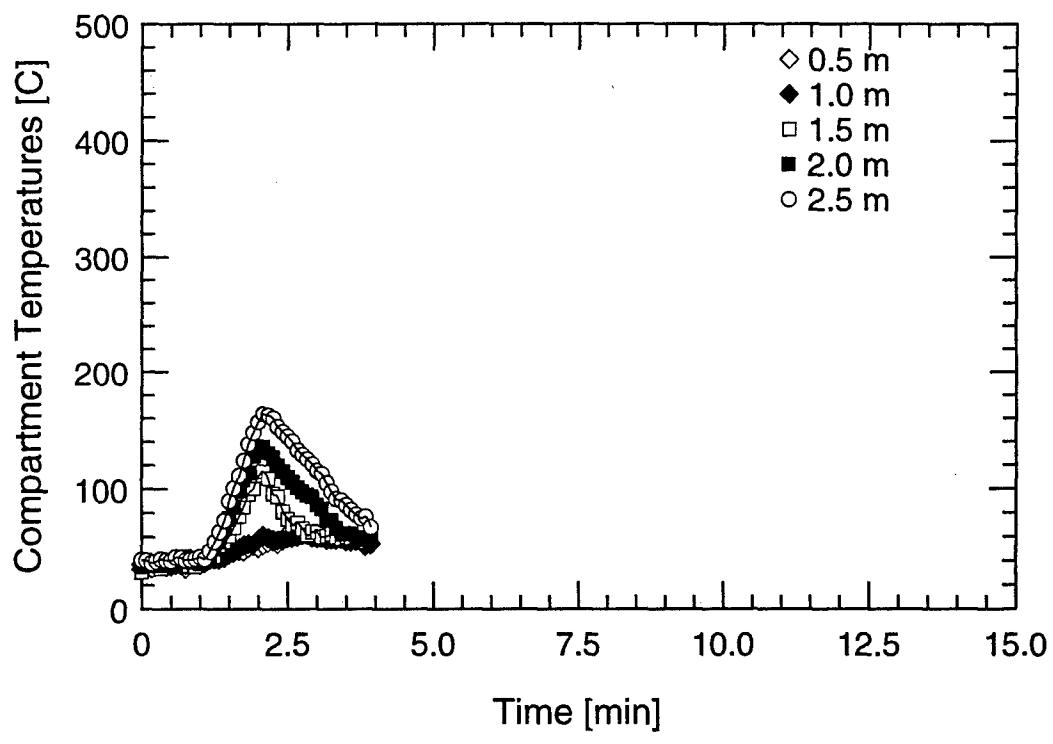
Water Mist System Flow Rate



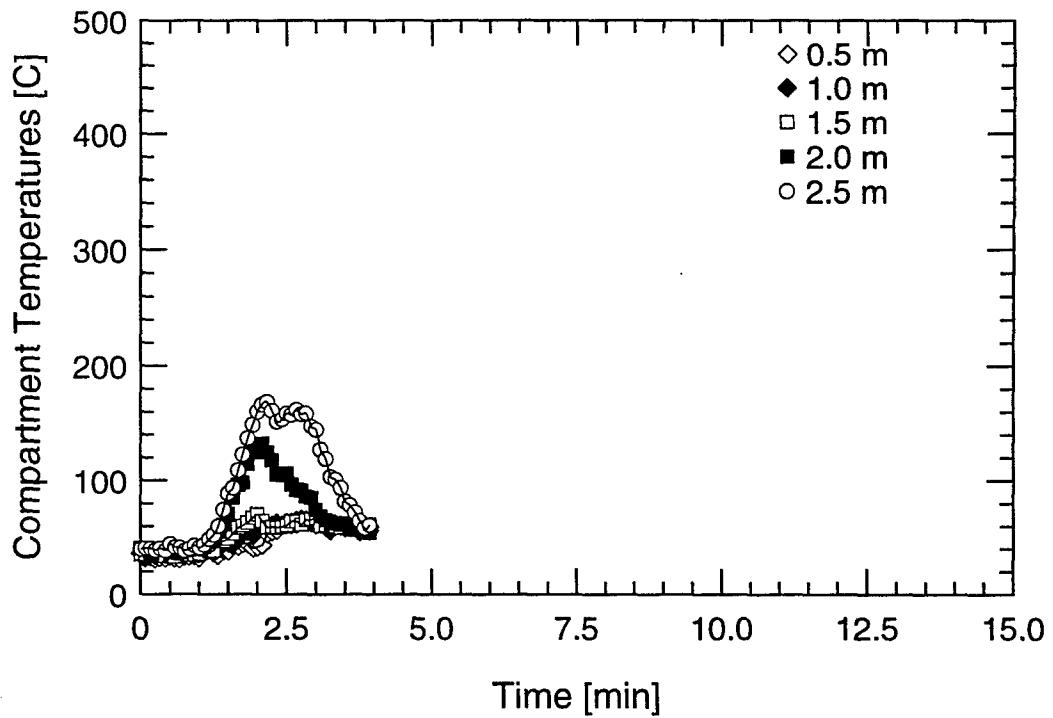
Water Mist System Pressure

TEST #53

B-321



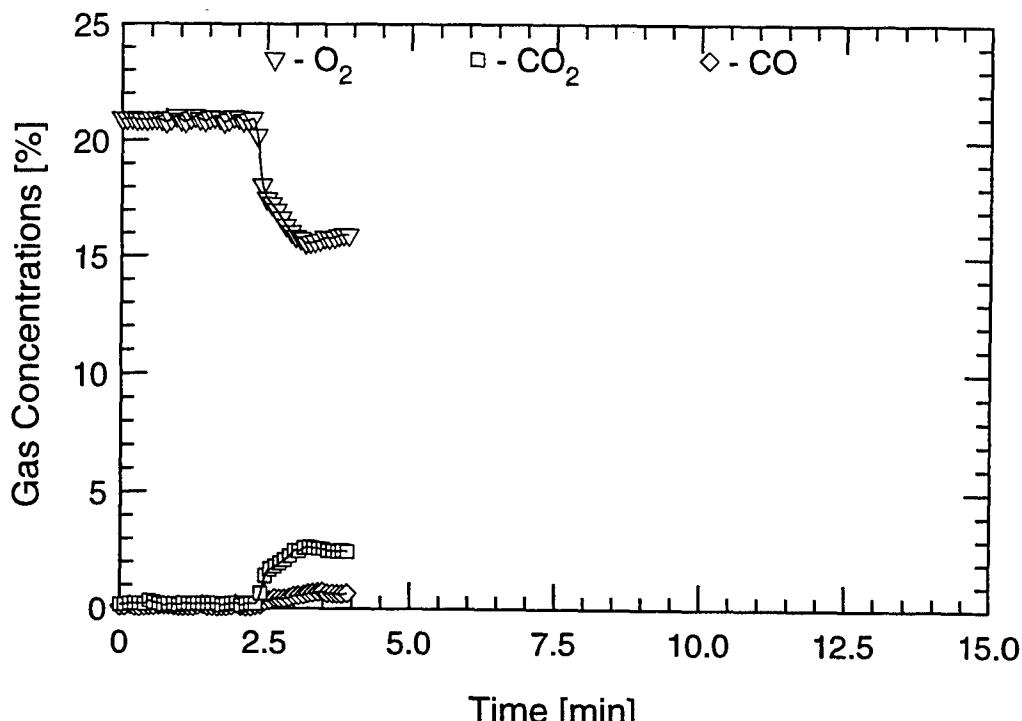
Aft Tree



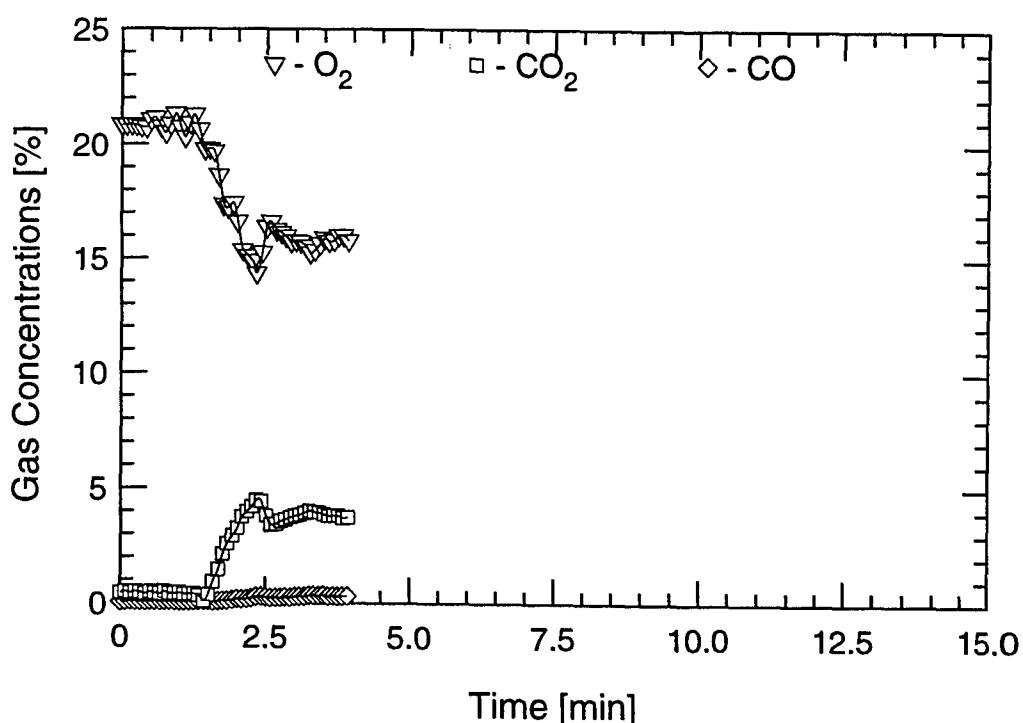
Forward Tree

TEST #54

B-322



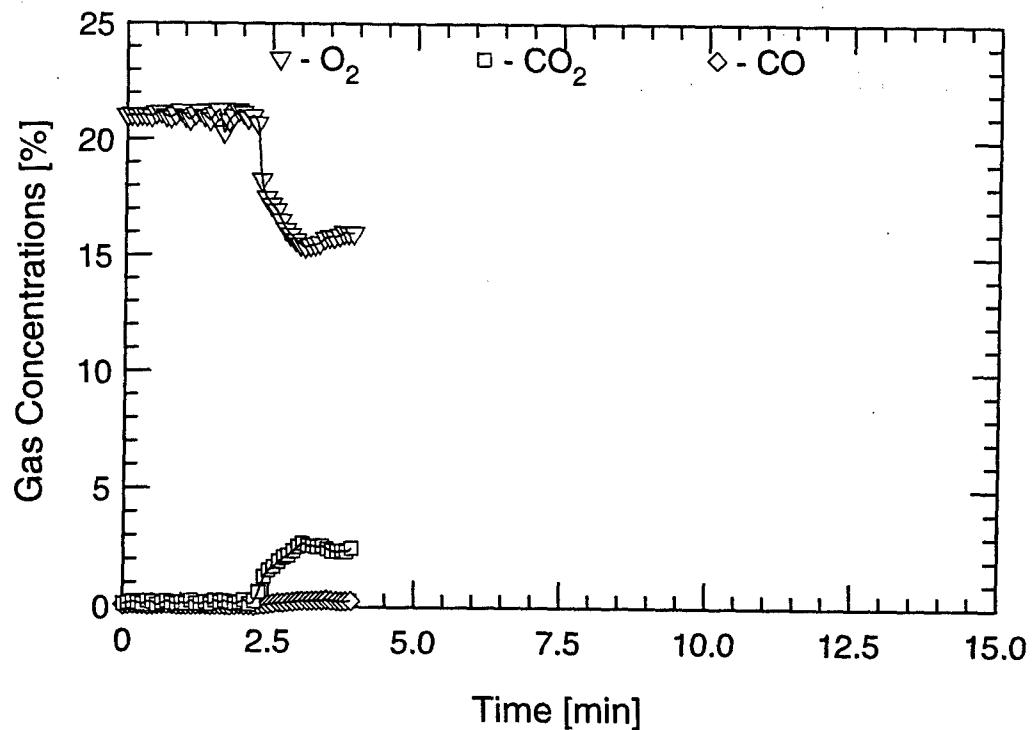
Aft Tree (Low)



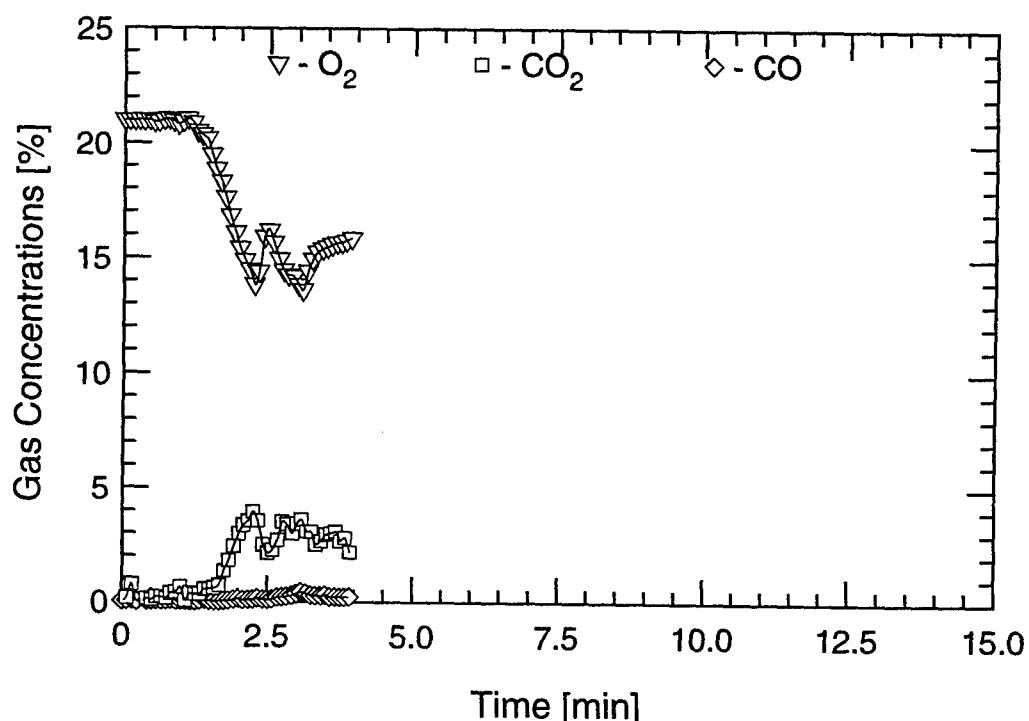
Aft Tree (High)

TEST #54

B-323



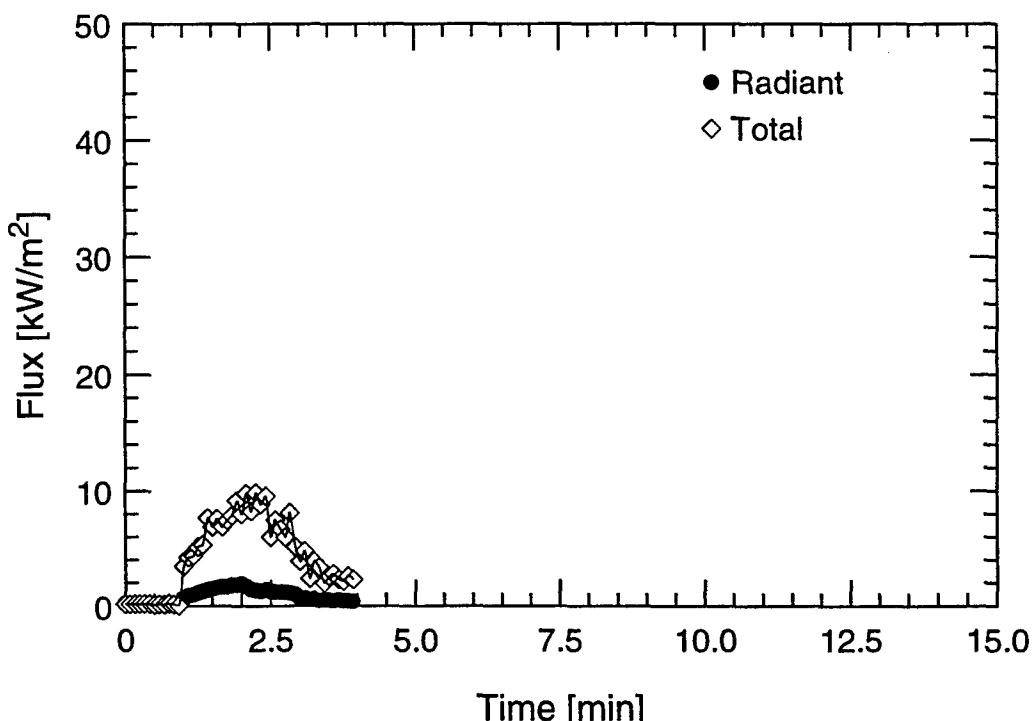
Forward Tree (Low)



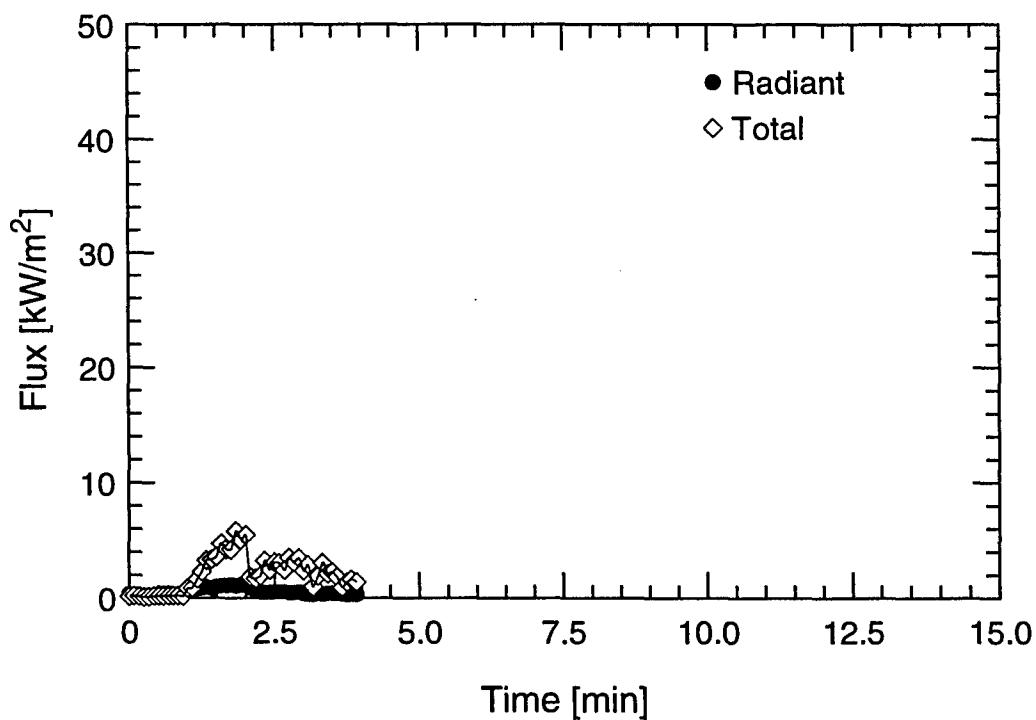
Forward Tree (High)

TEST #54

B-324



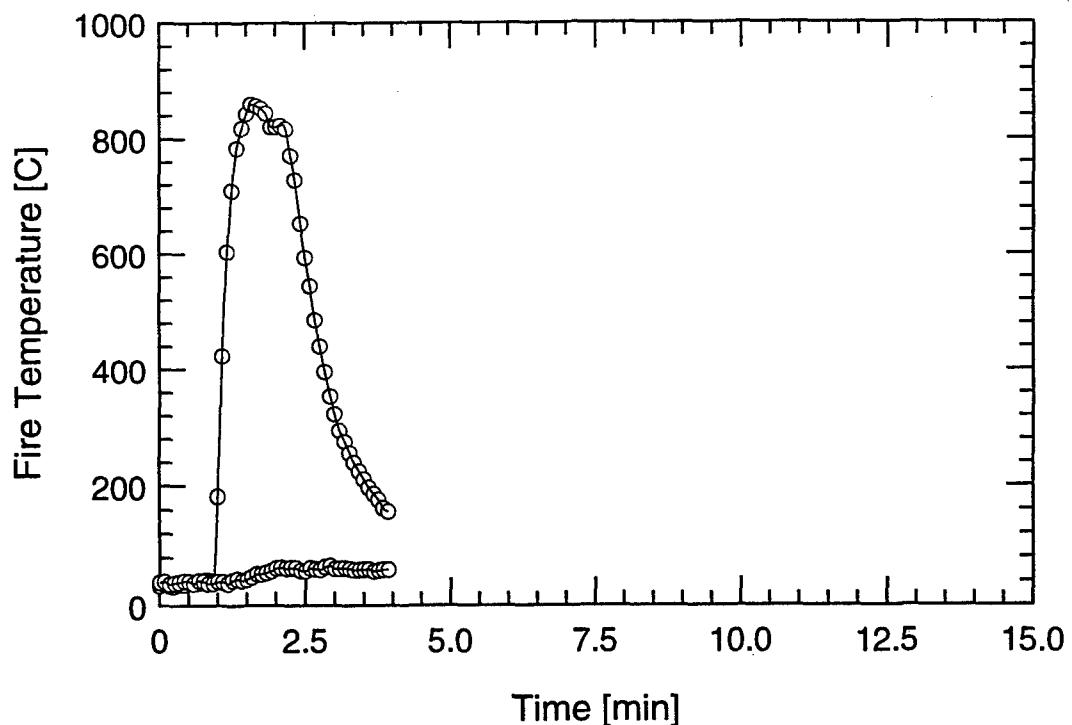
Overhead



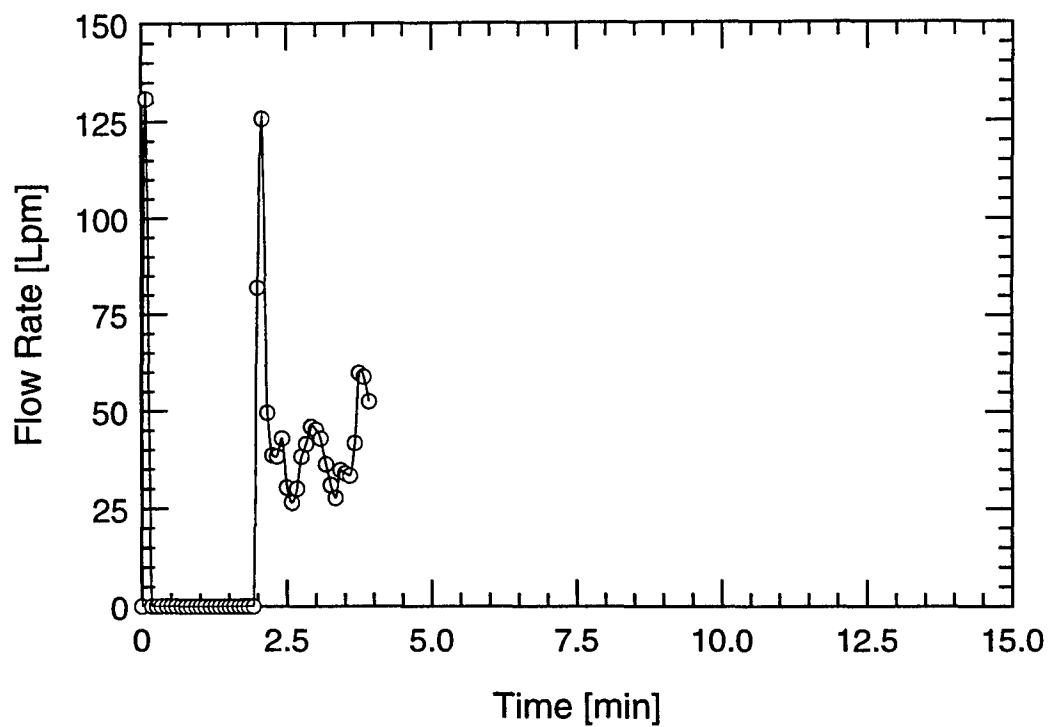
Forward Bulkhead

TEST #54

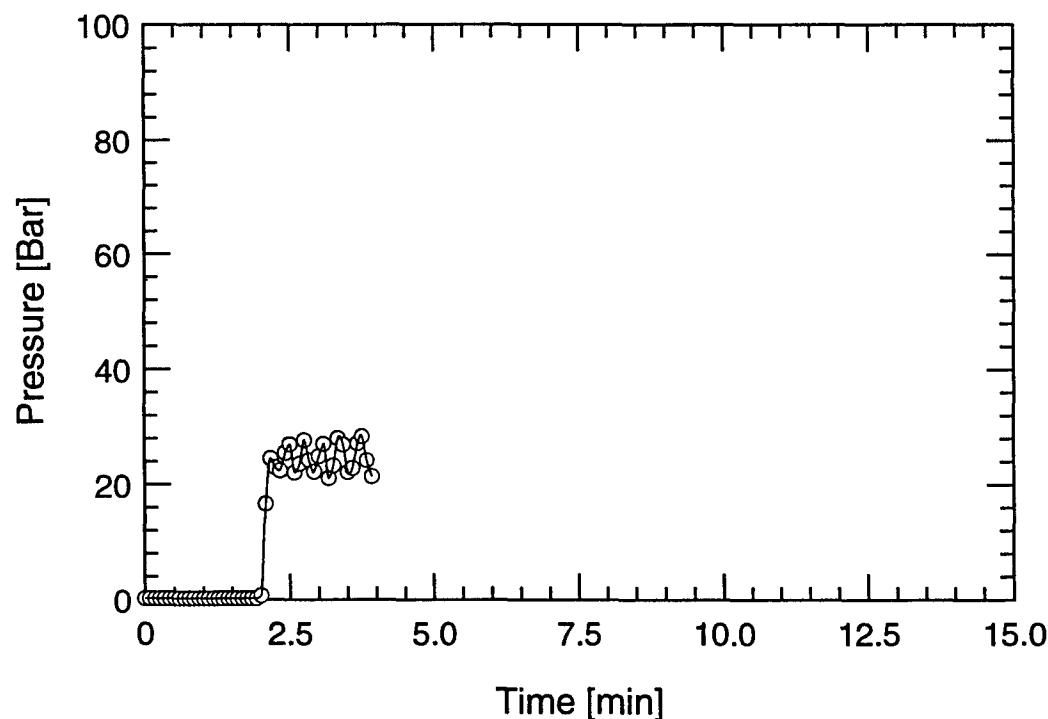
B-325



TEST #54
B-326

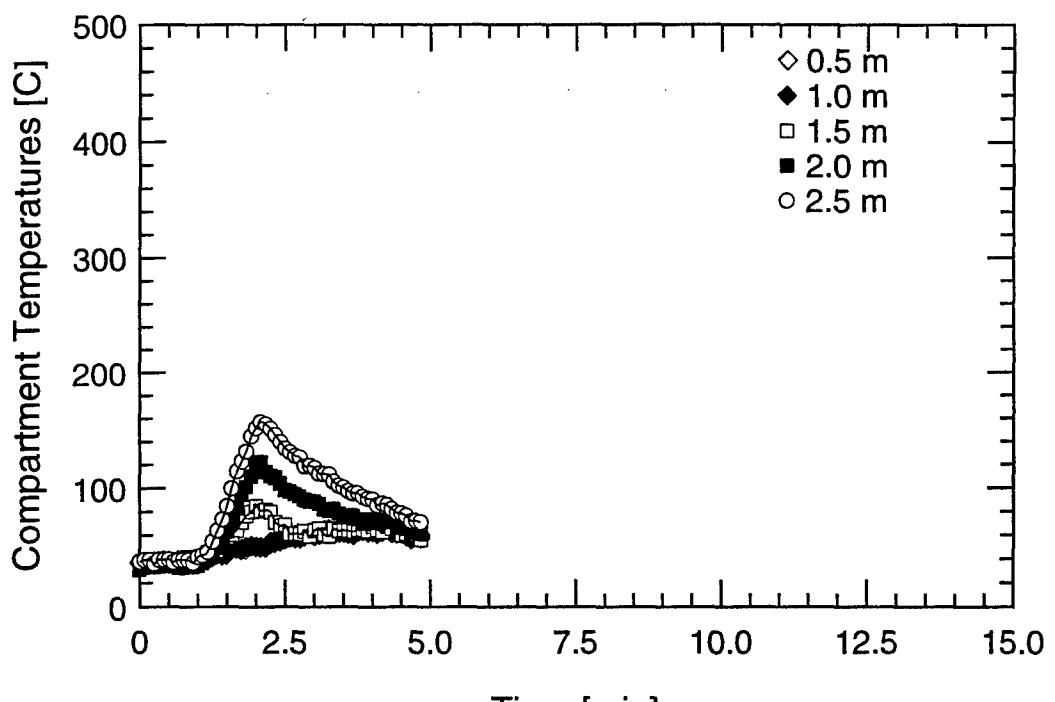


Water Mist System Flow Rate

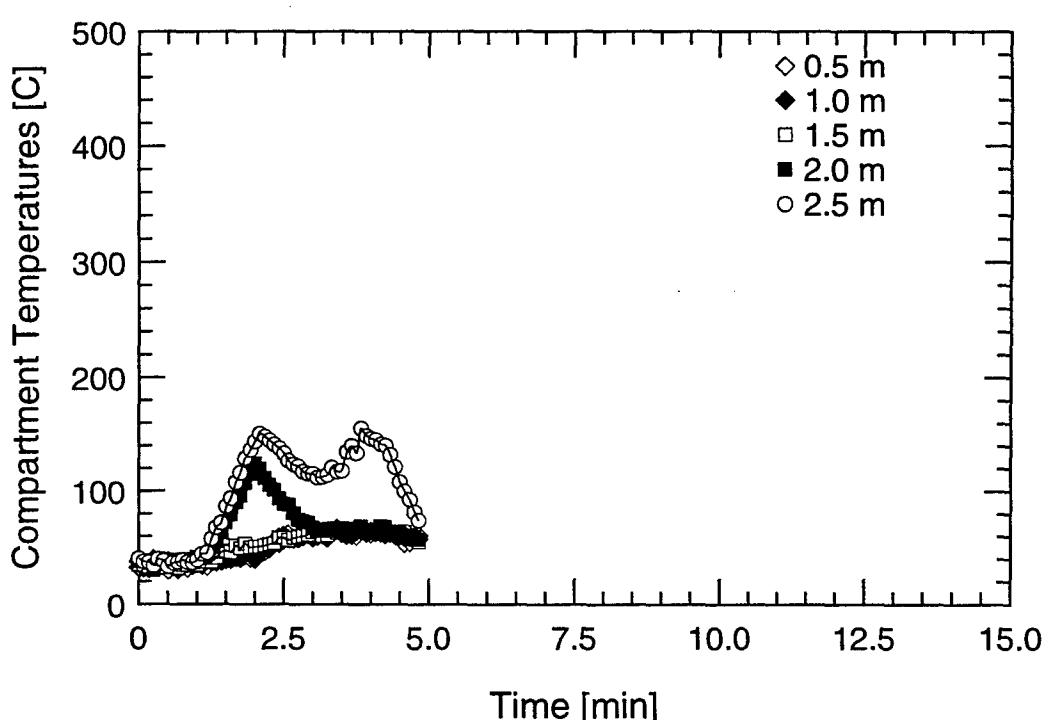


Water Mist System Pressure

TEST #54
B-327



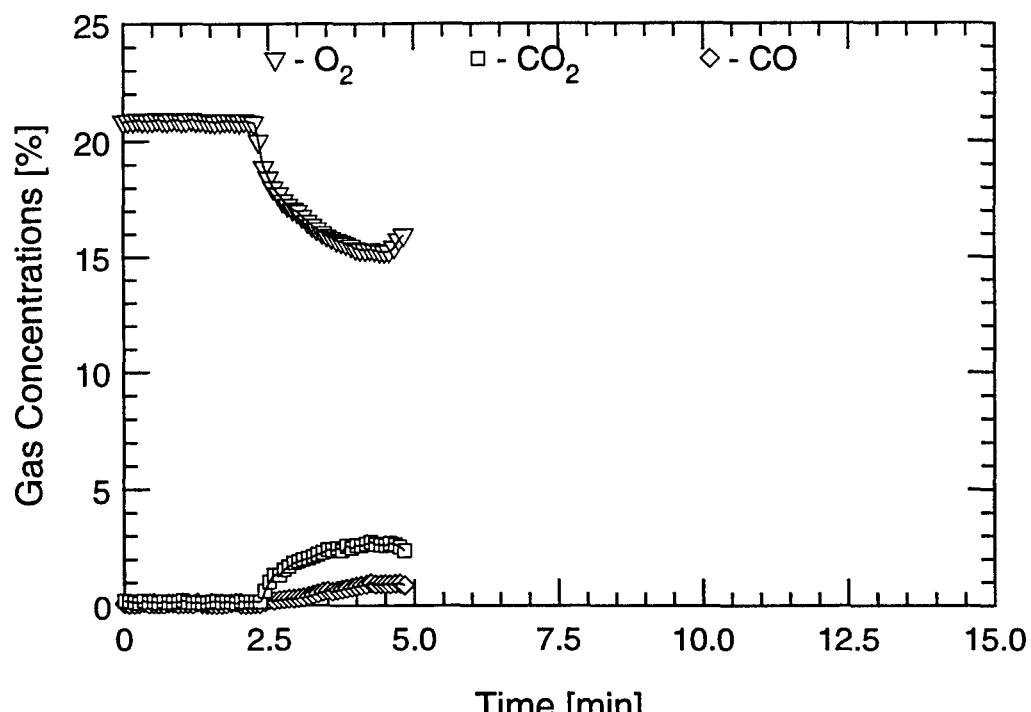
Aft Tree



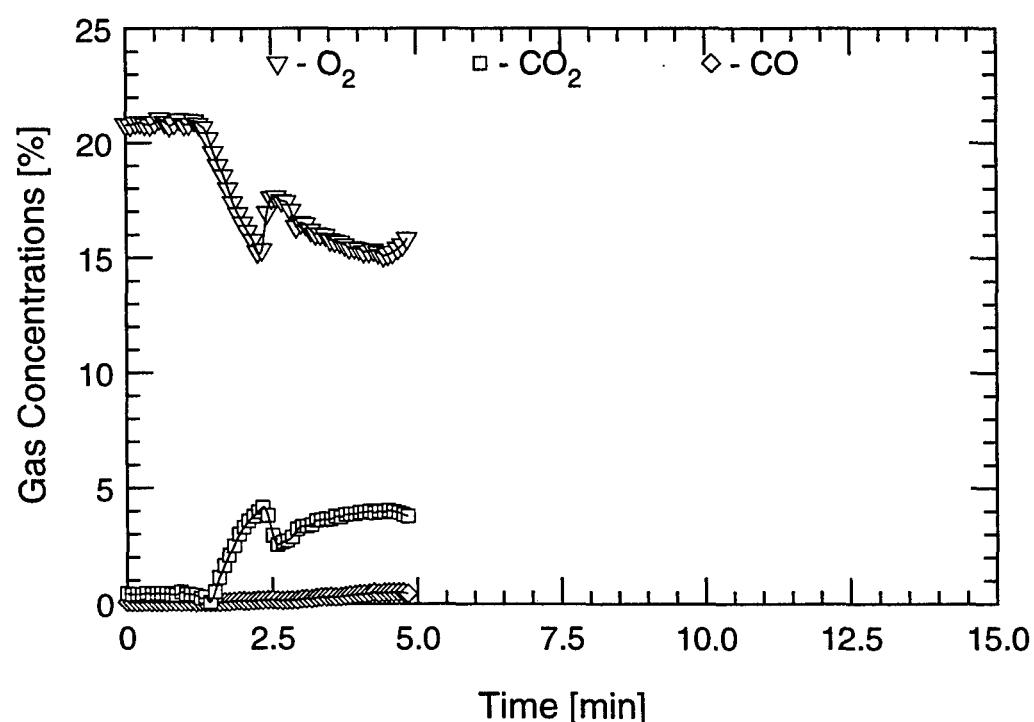
Forward Tree

TEST #55

B-328



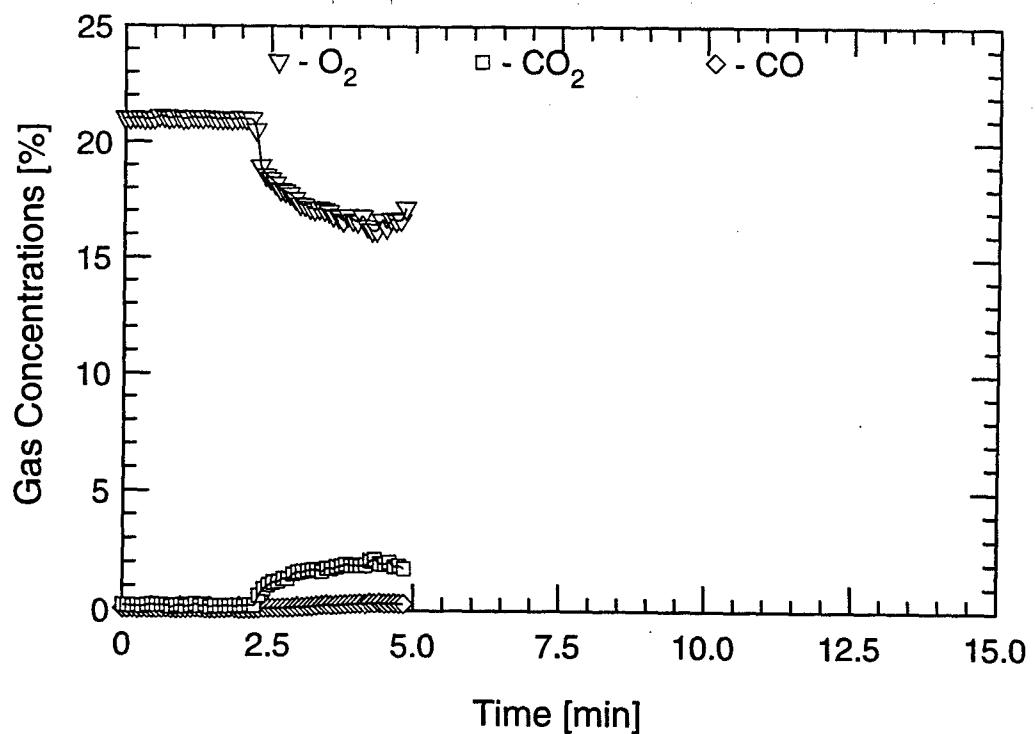
Aft Tree (Low)



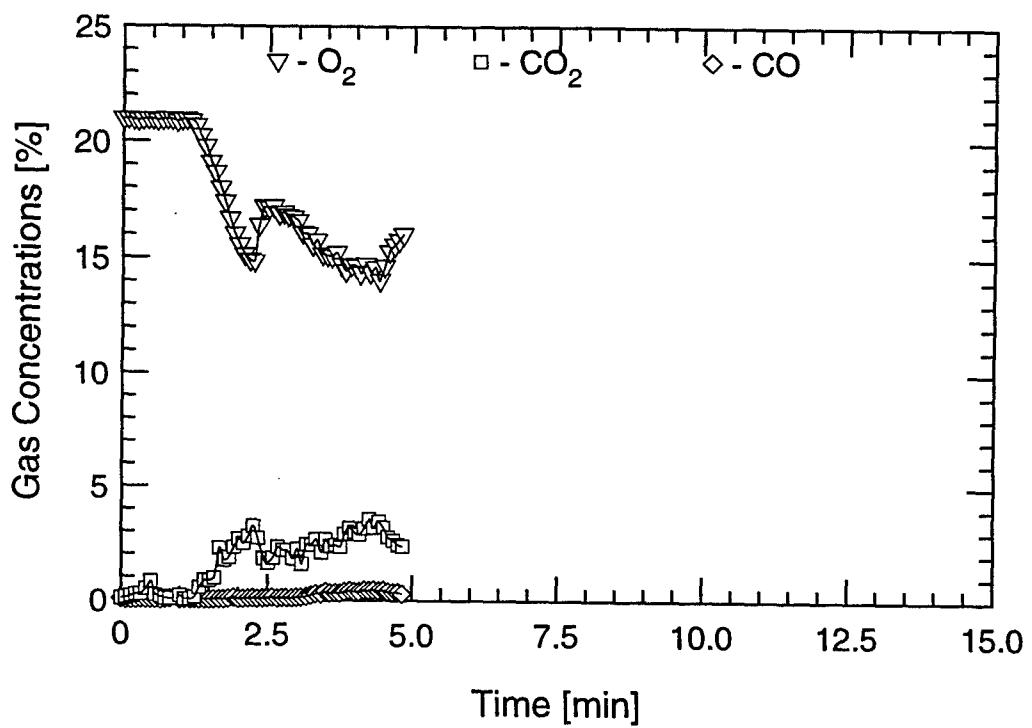
Aft Tree (High)

TEST #55

B-329



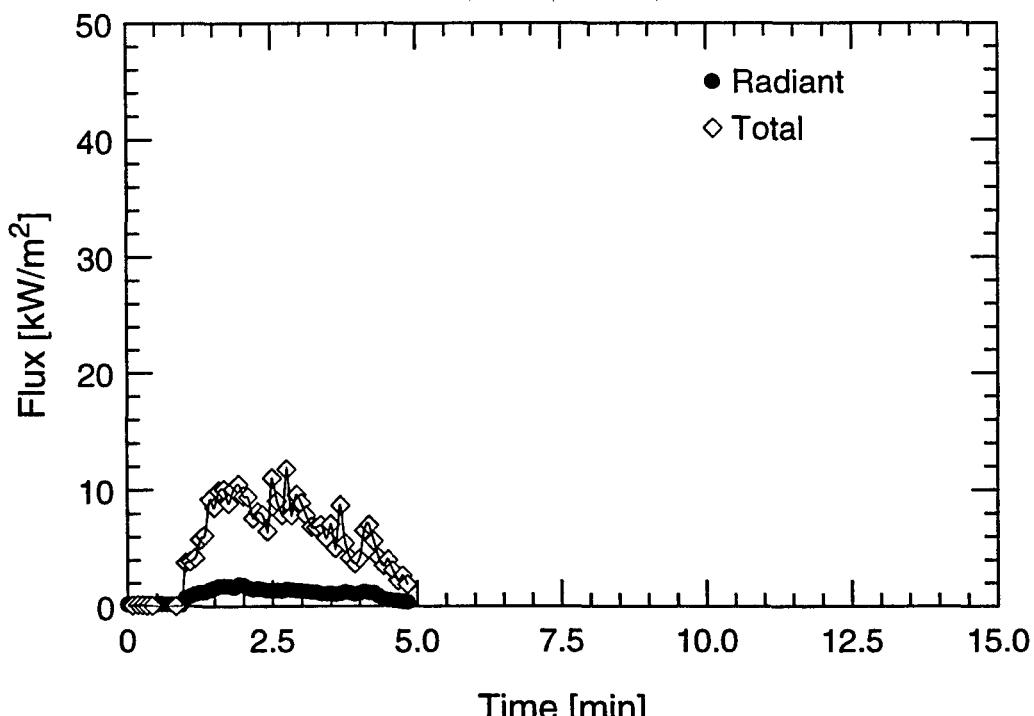
Forward Tree (Low)



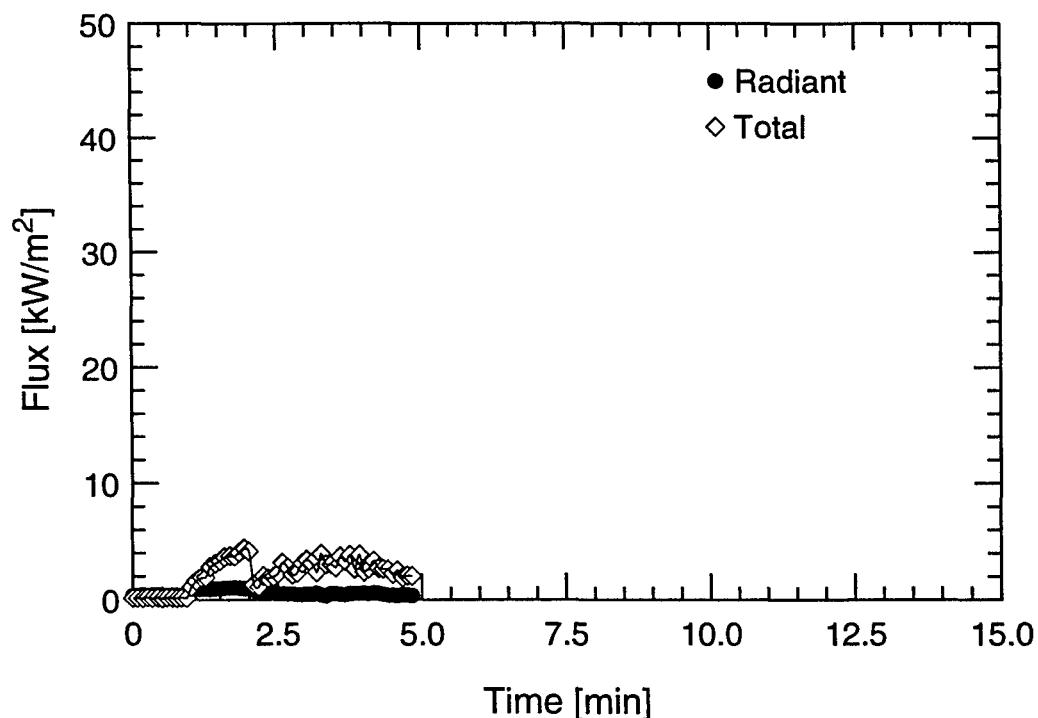
Forward Tree (High)

TEST #55

B-330



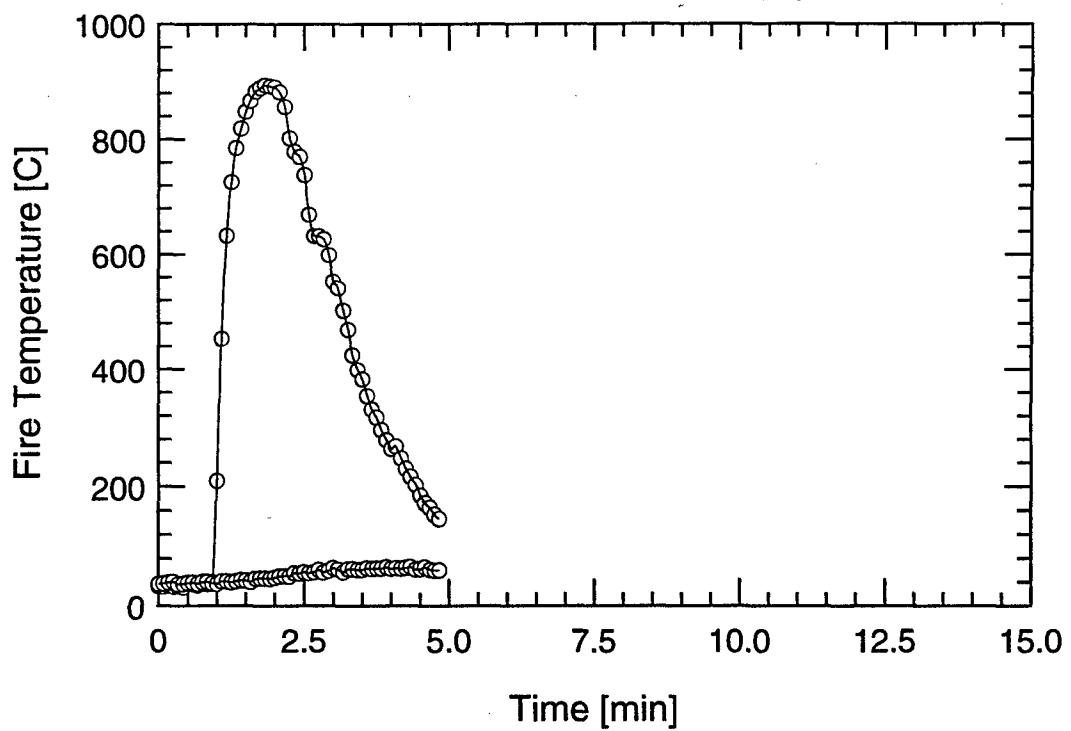
Overhead



Forward Bulkhead

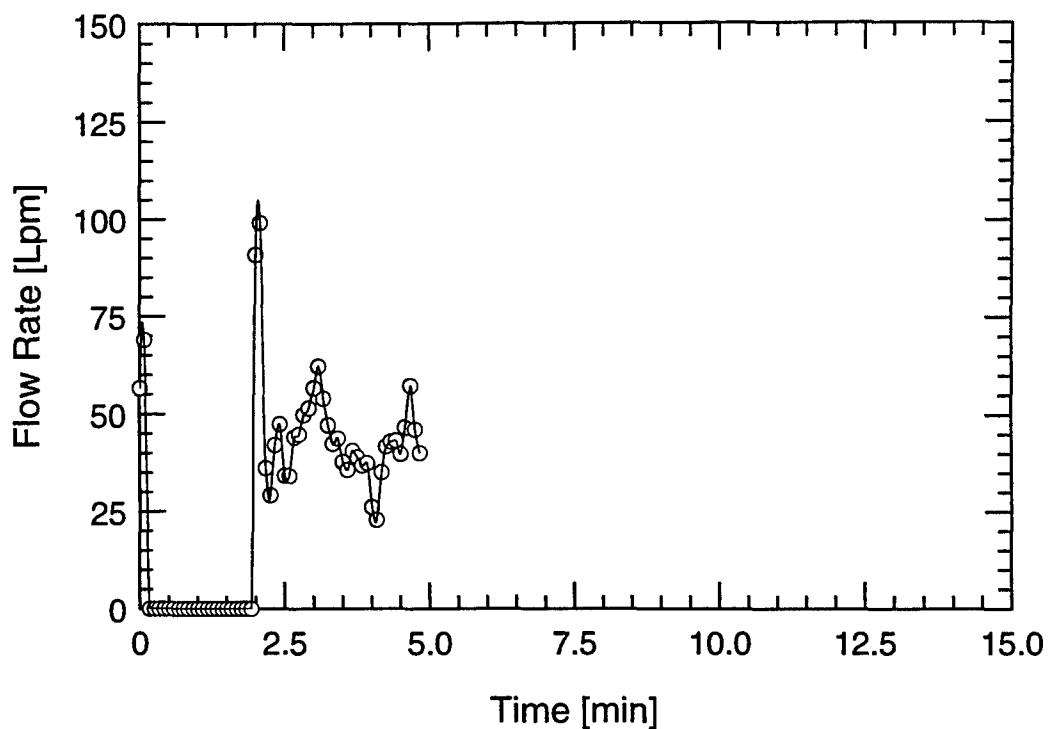
TEST #55

B-331

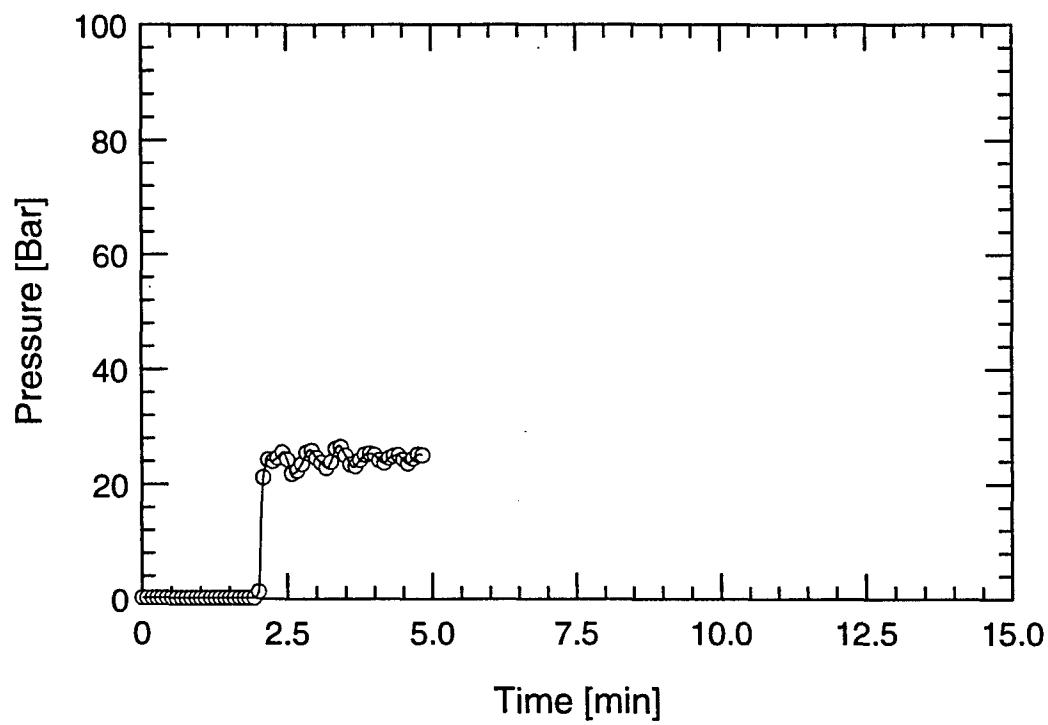


TEST #55

B-332



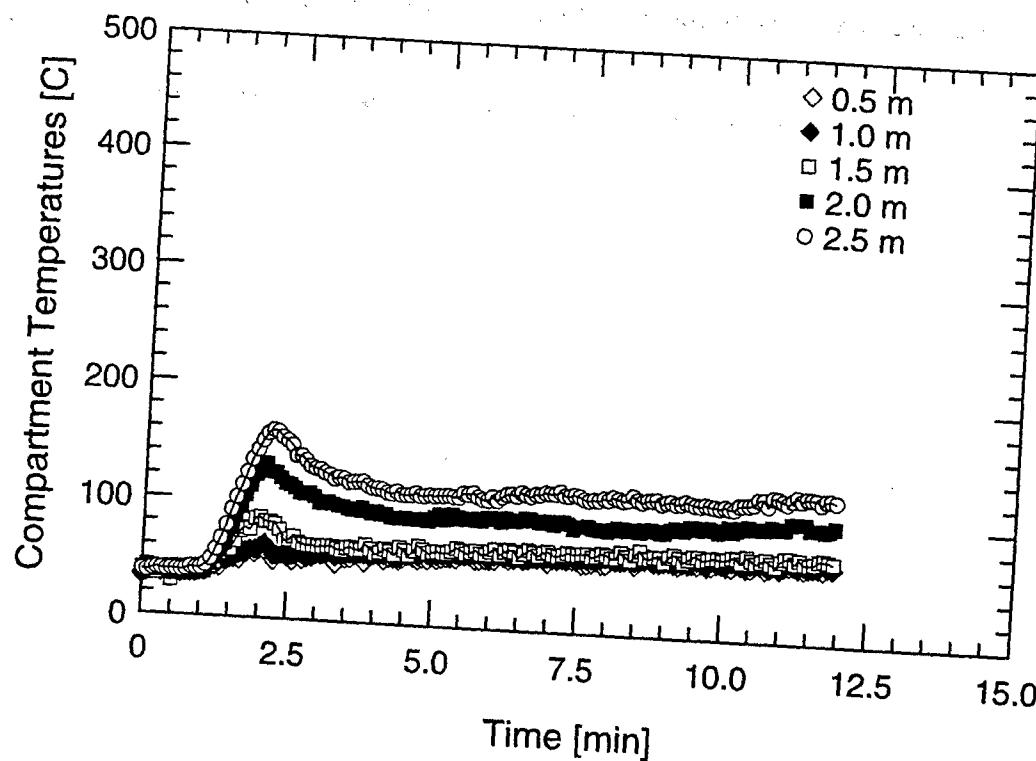
Water Mist System Flow Rate



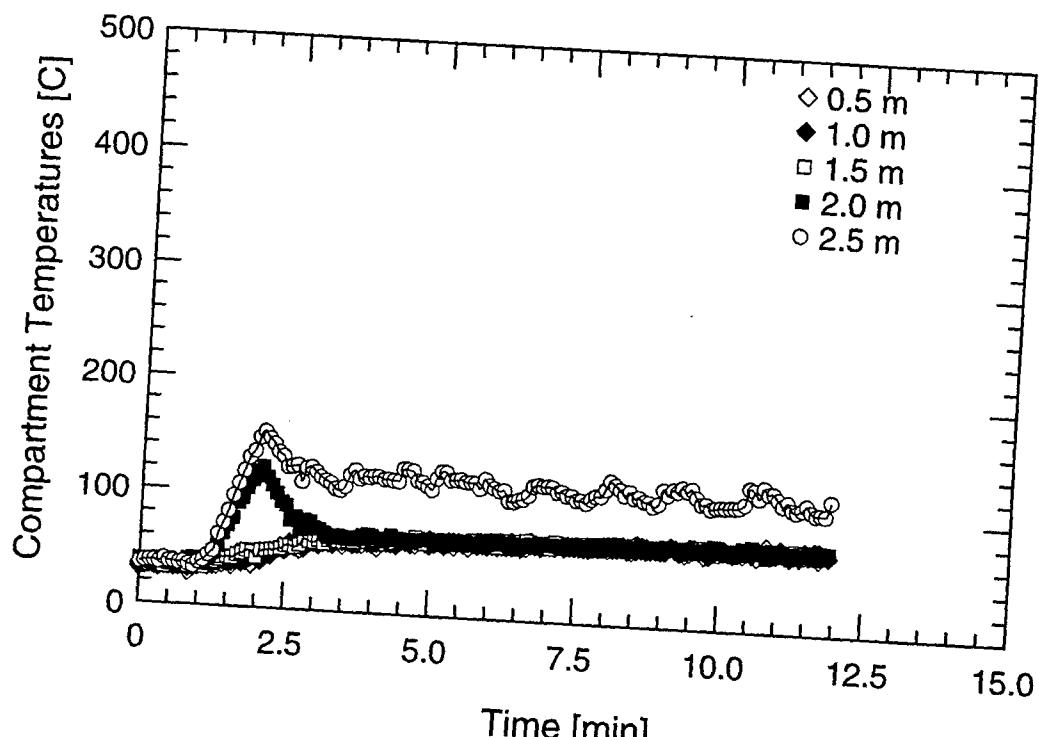
Water Mist System Pressure

TEST #55

B-333



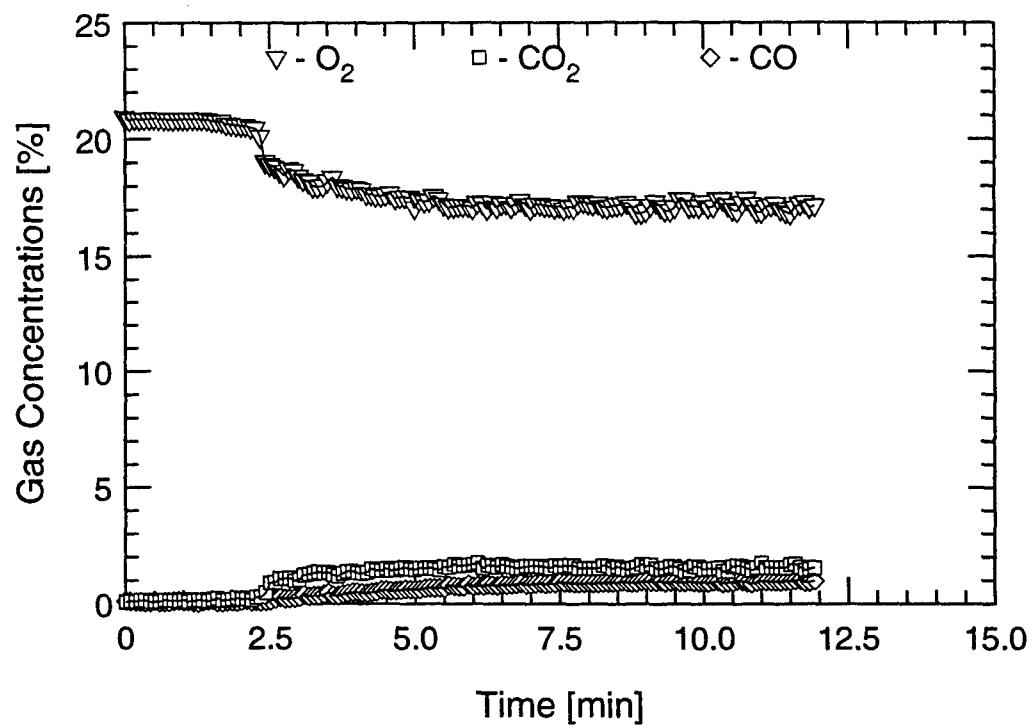
Aft Tree



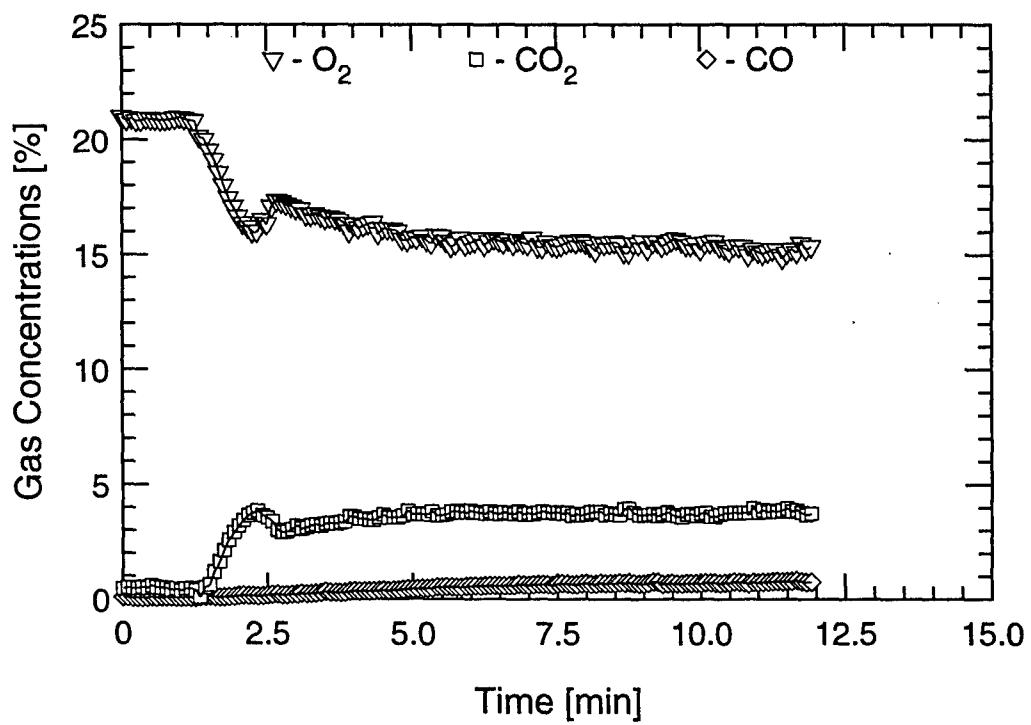
Forward Tree

TEST #56

B-334



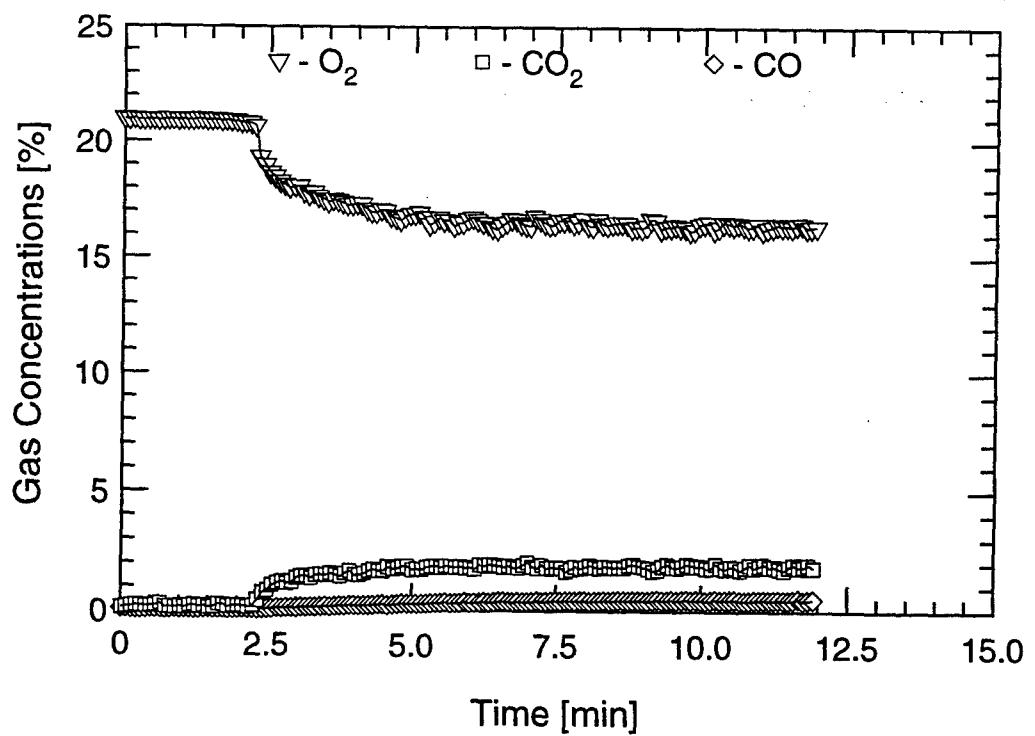
Aft Tree (Low)



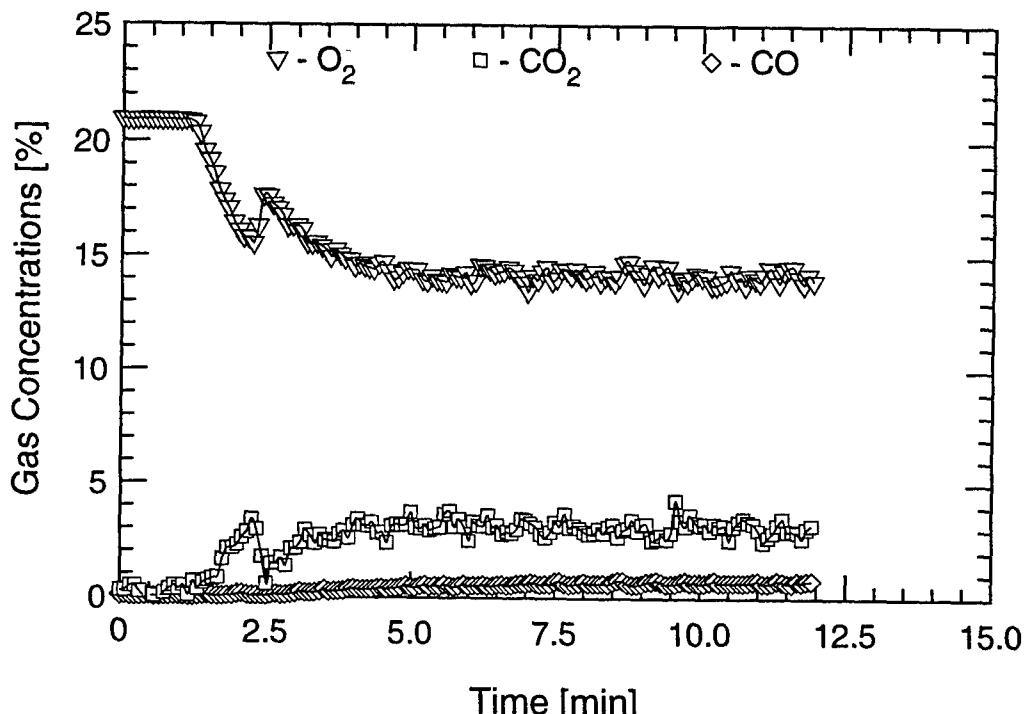
Aft Tree (High)

TEST #56

B-335



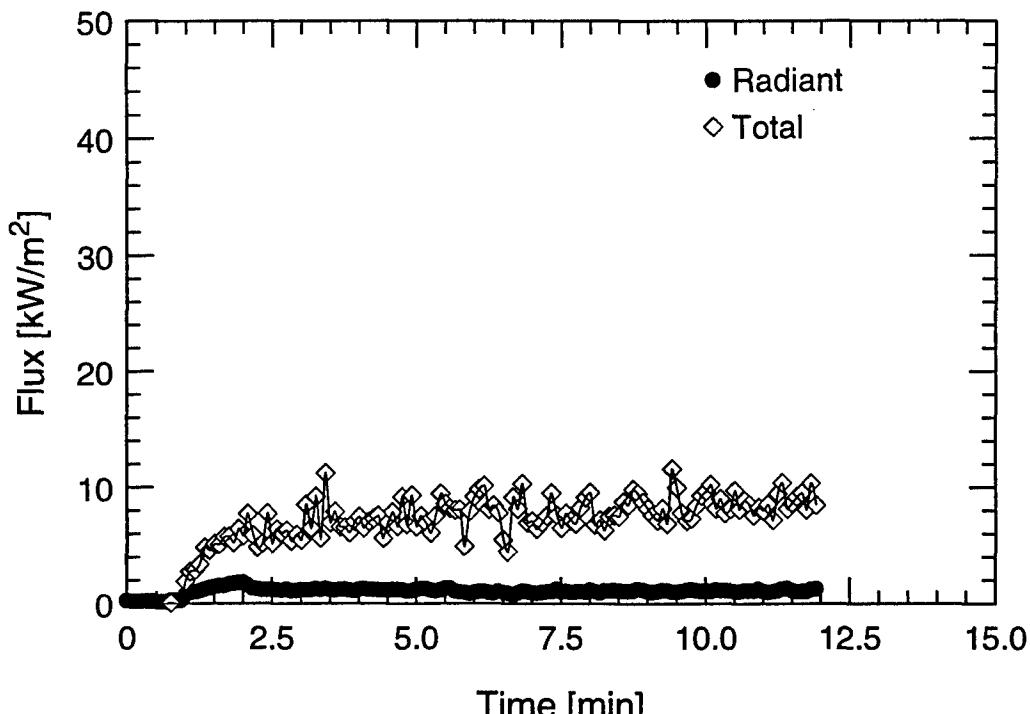
Forward Tree (Low)



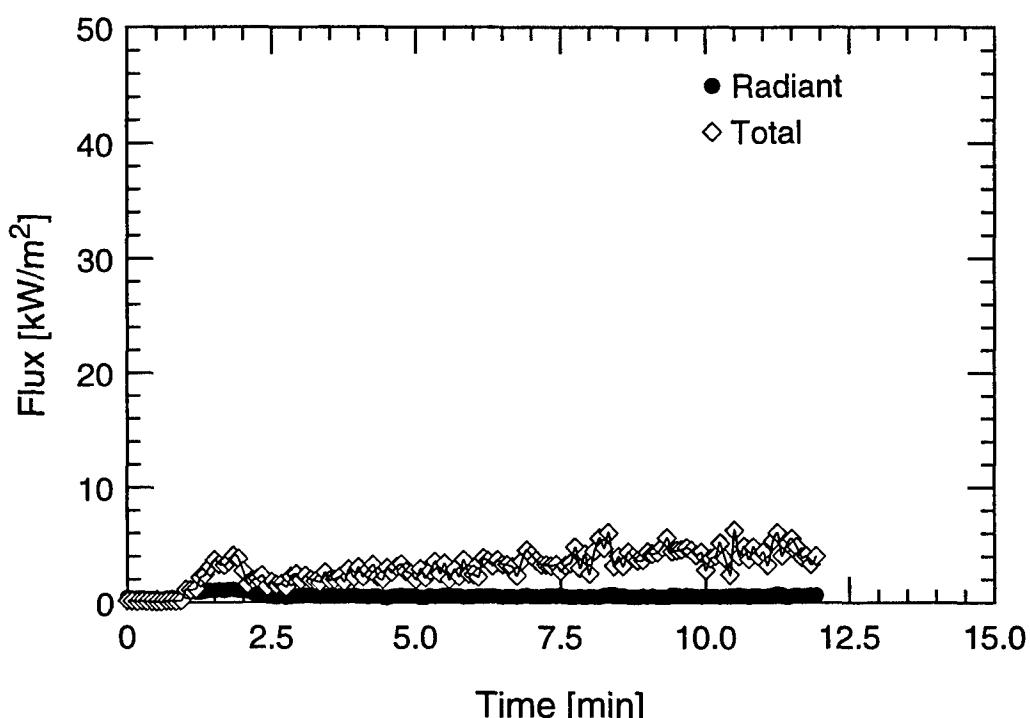
Forward Tree (High)

TEST #56

B-336



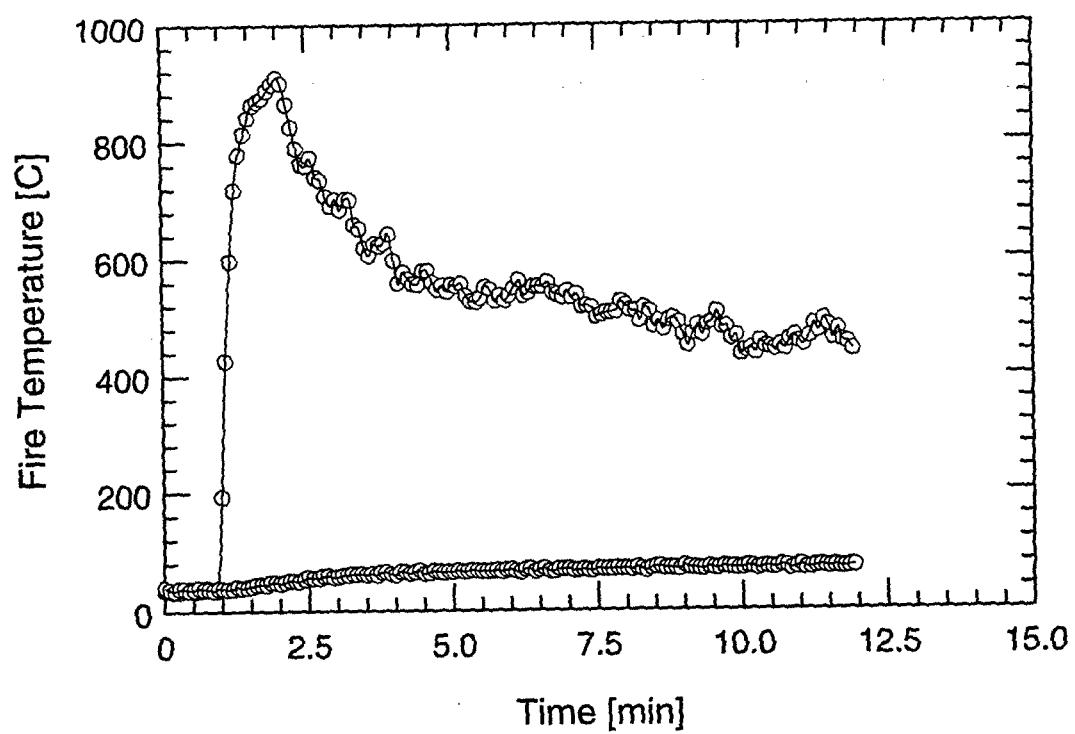
Overhead



Forward Bulkhead

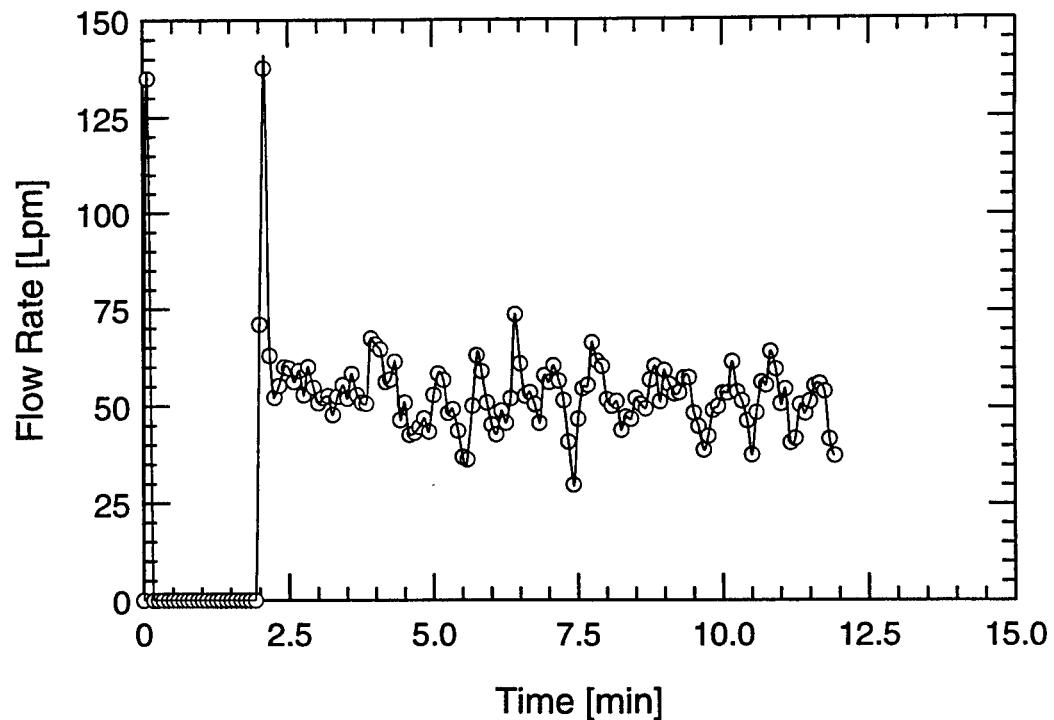
TEST #56

B-337

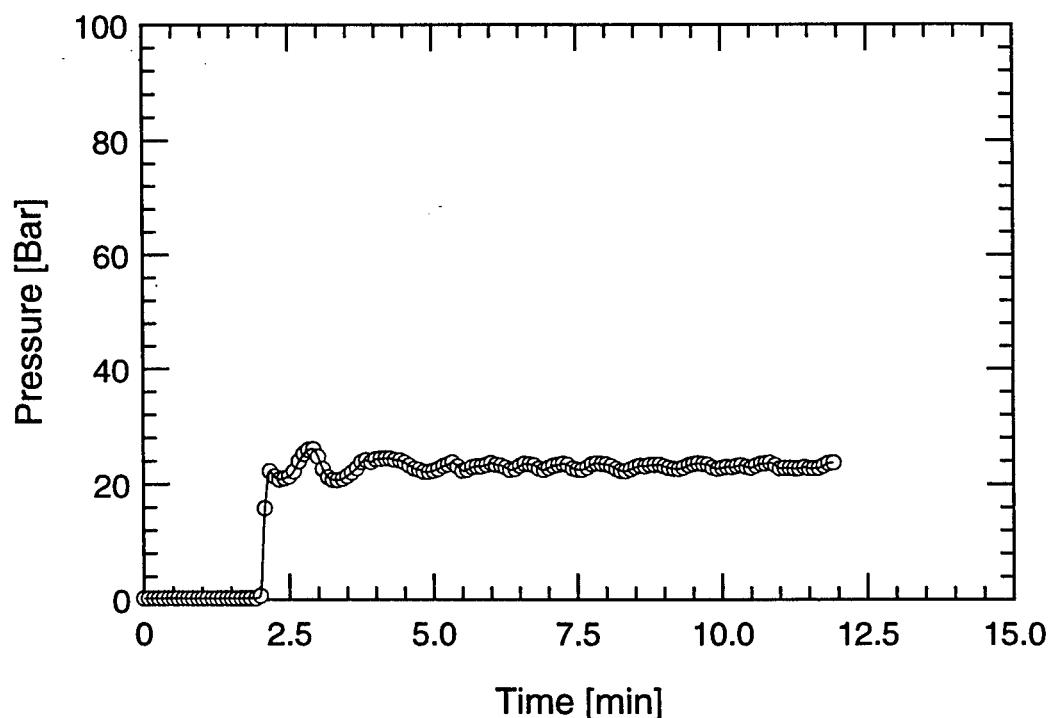


TEST #56

B-338



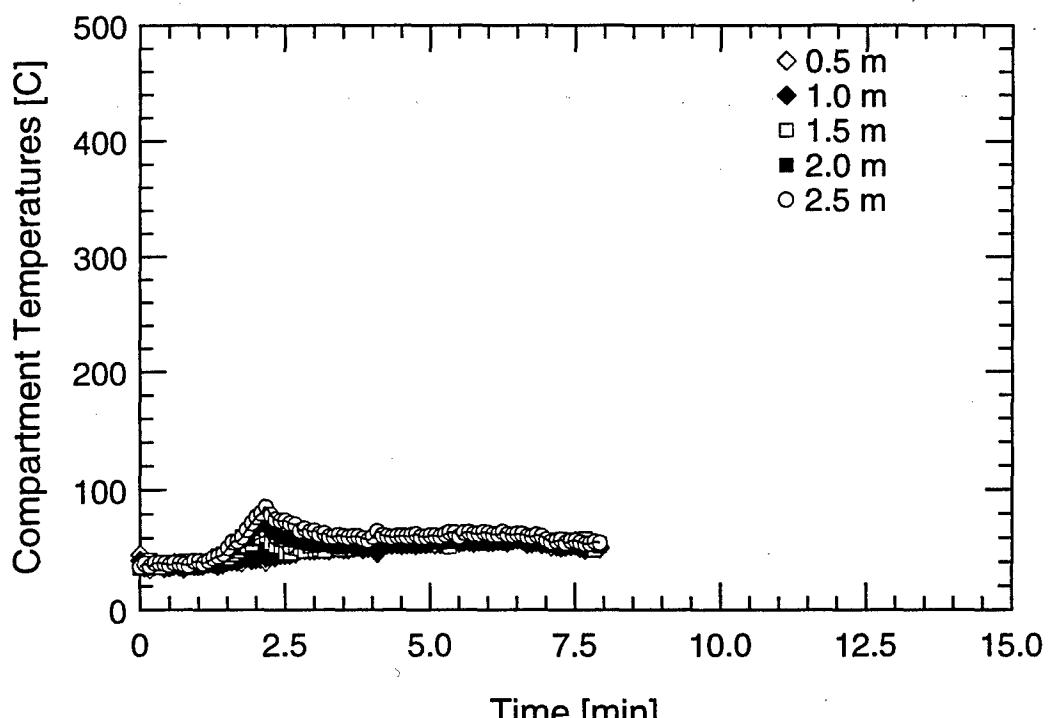
Water Mist System Flow Rate



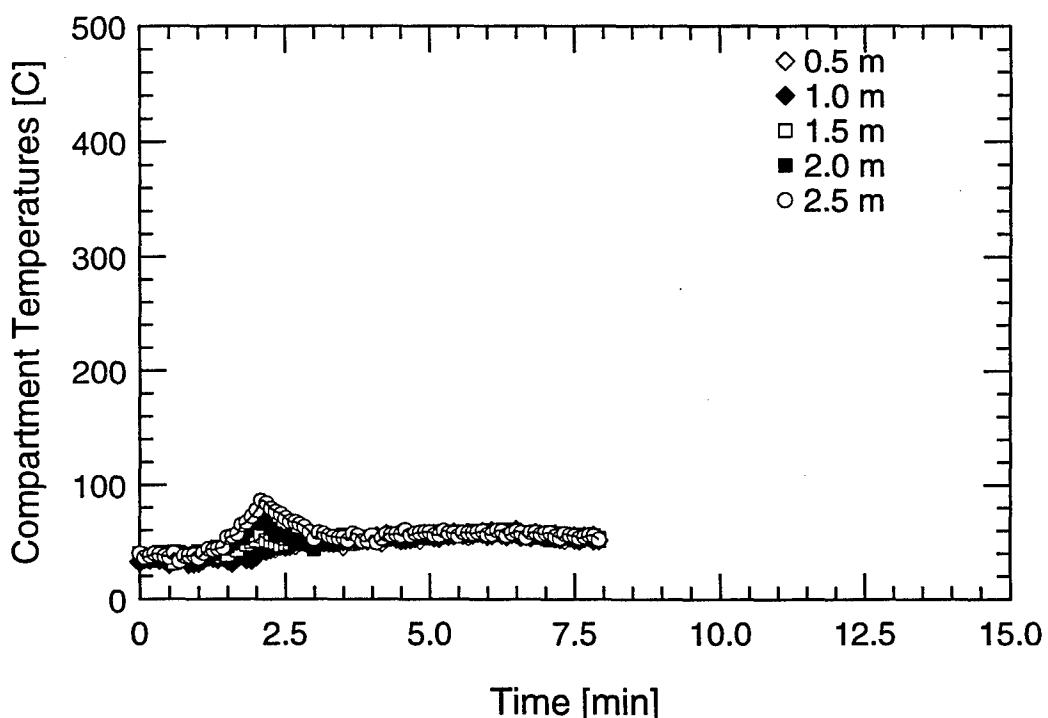
Water Mist System Pressure

TEST #56

B-339



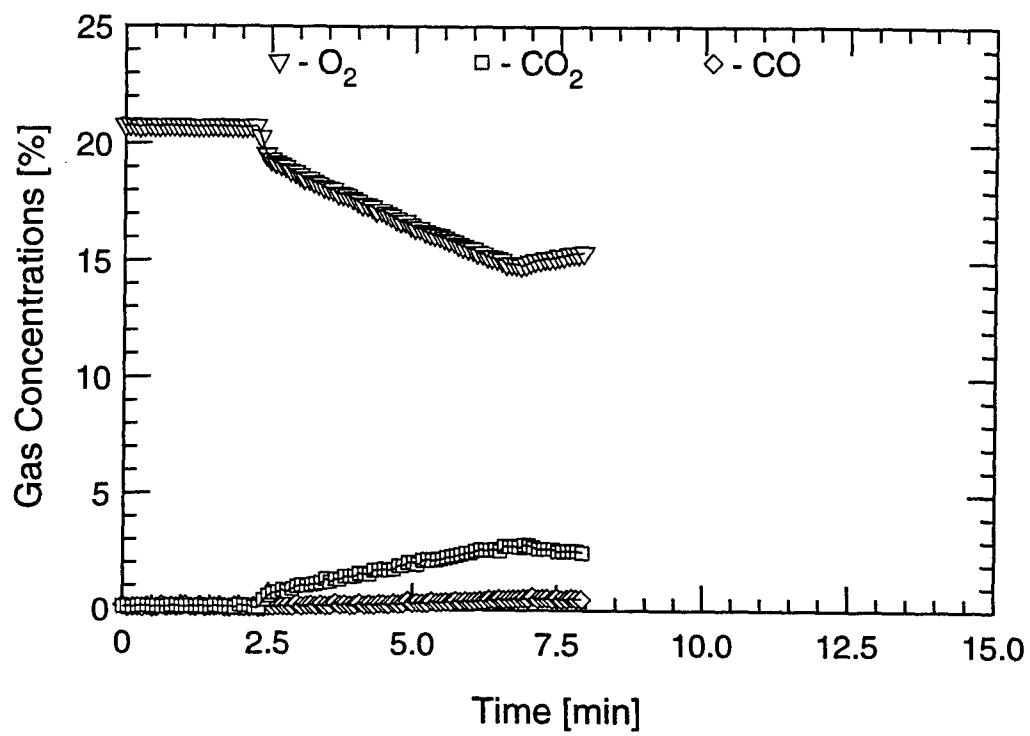
Aft Tree



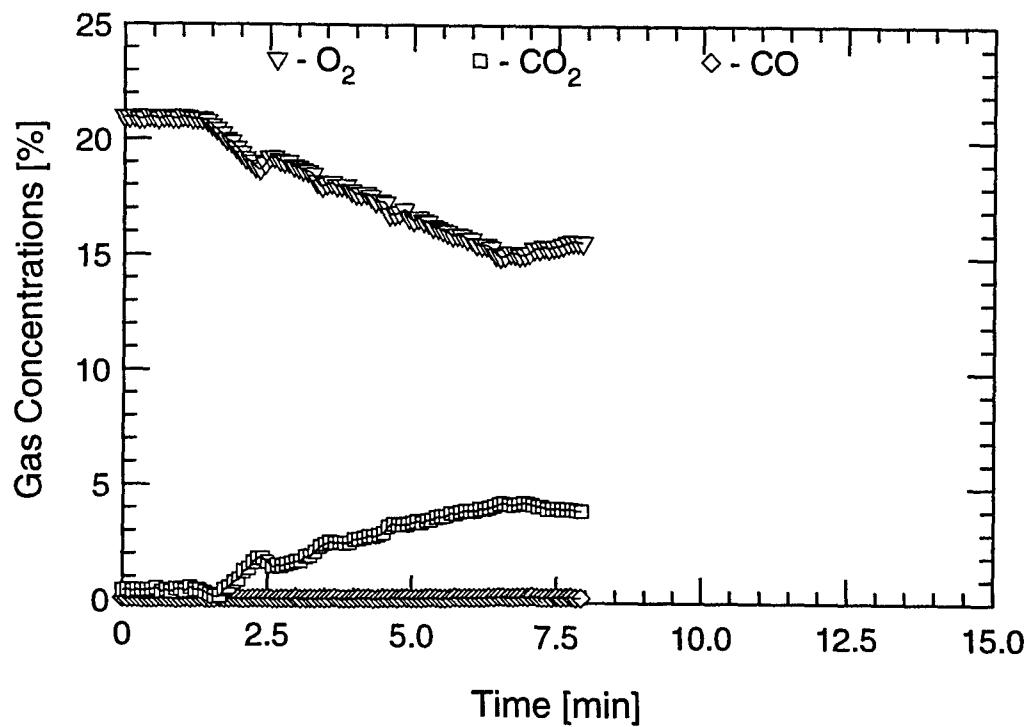
Forward Tree

TEST #57

B-340



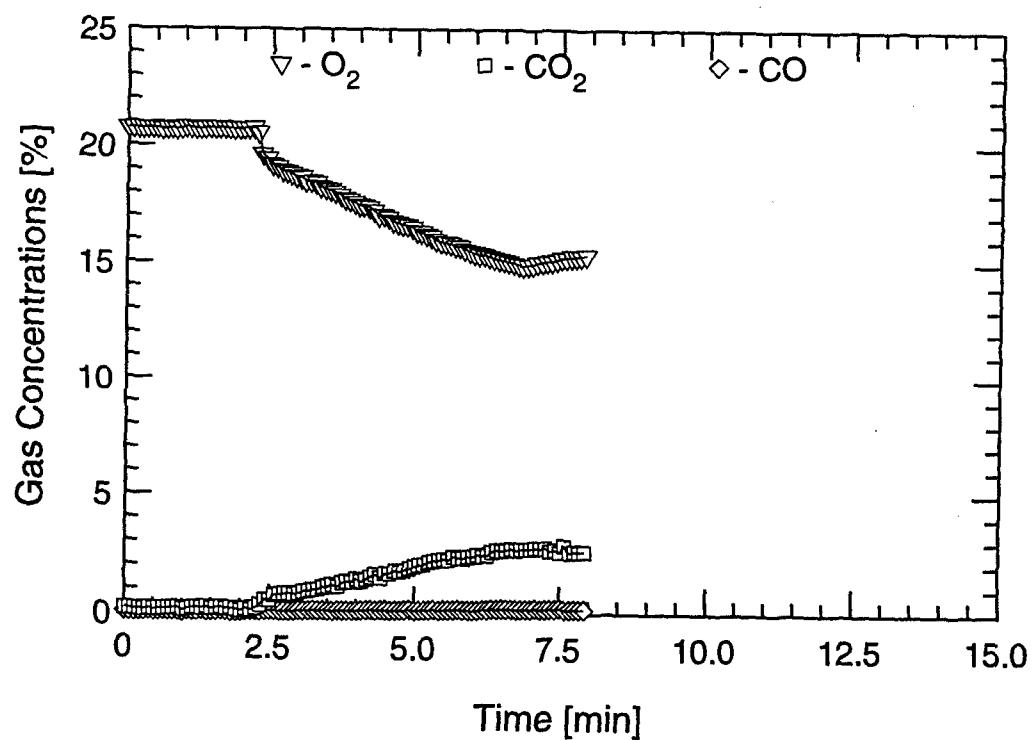
Aft Tree (Low)



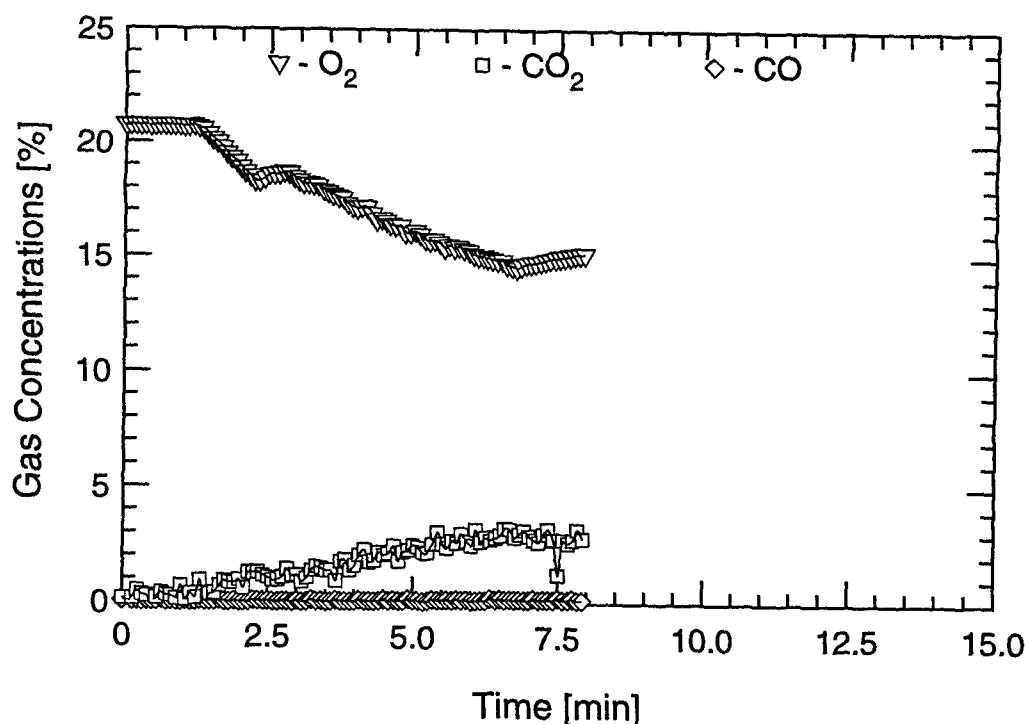
Aft Tree (High)

TEST #57

B-341



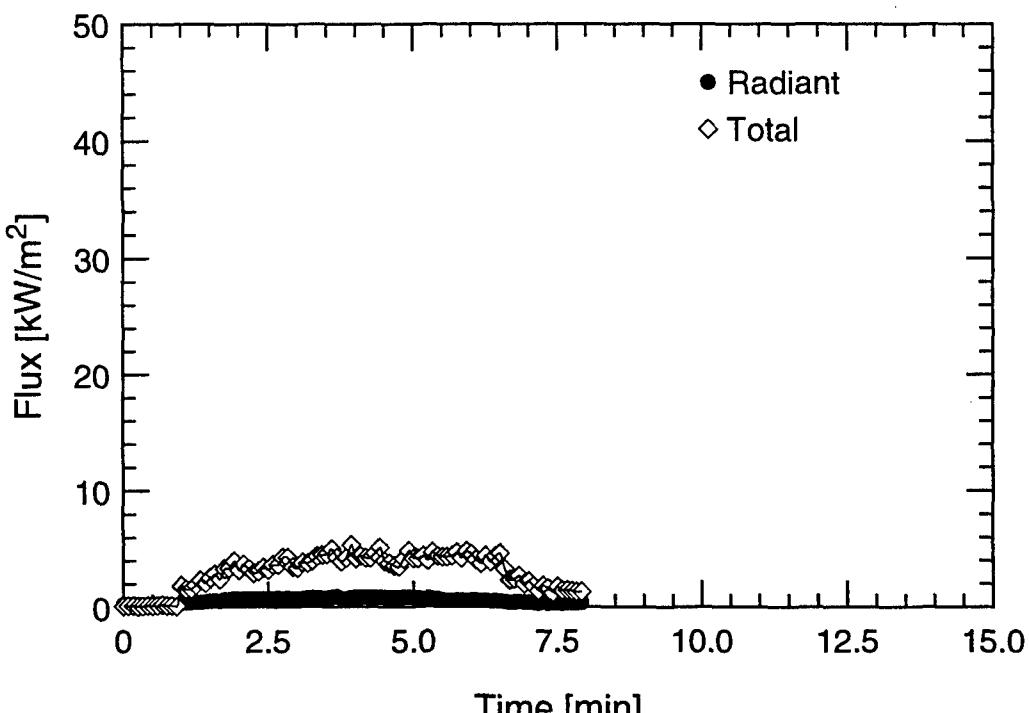
Forward Tree (Low)



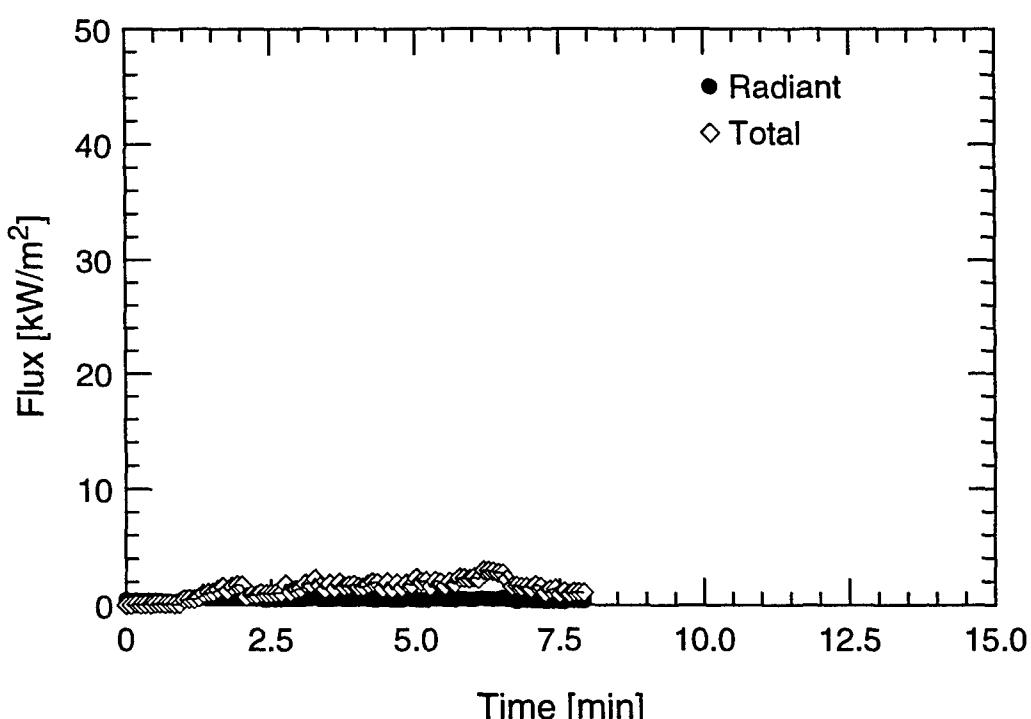
Forward Tree (High)

TEST #57

B-342

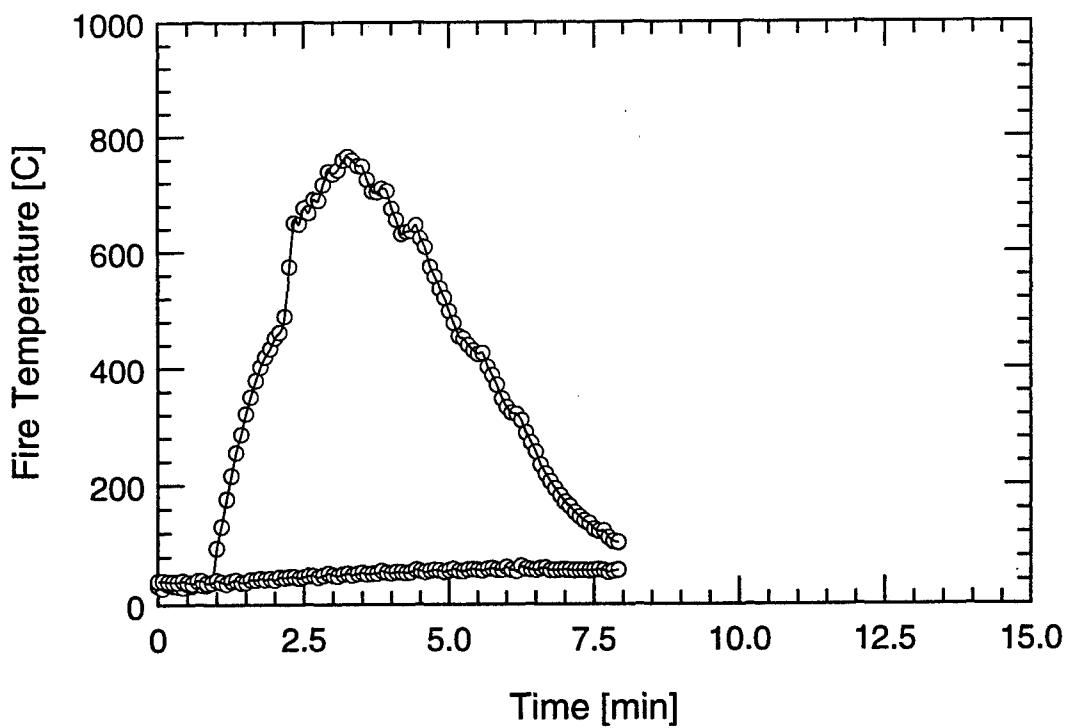


Overhead



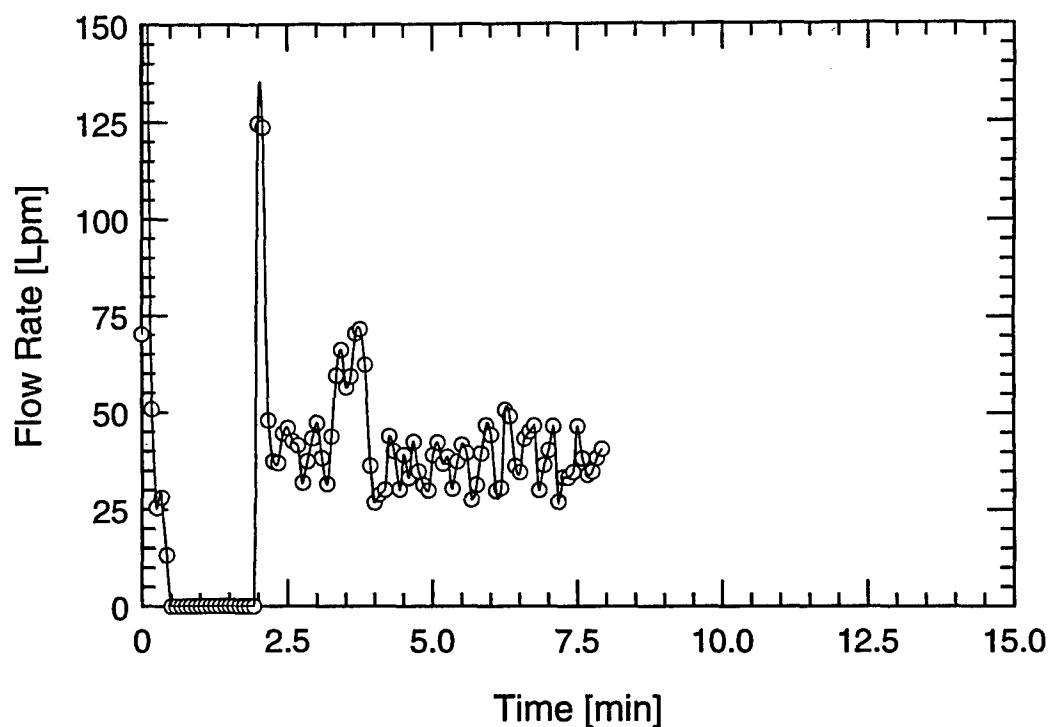
Forward Bulkhead

TEST #57

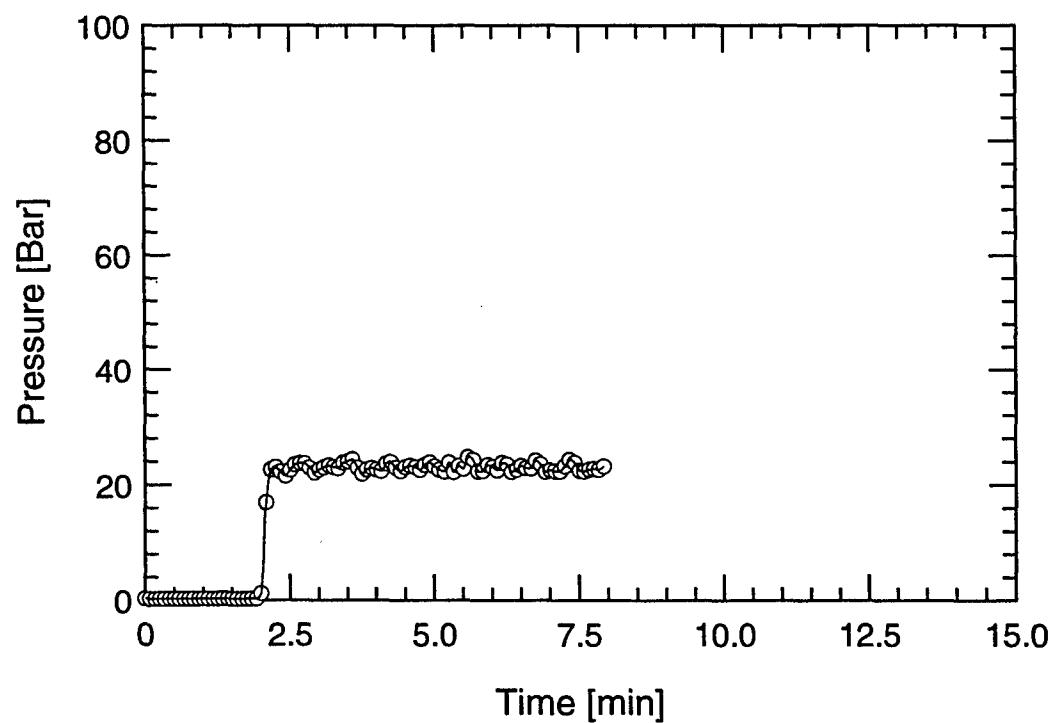


TEST #57

B-344



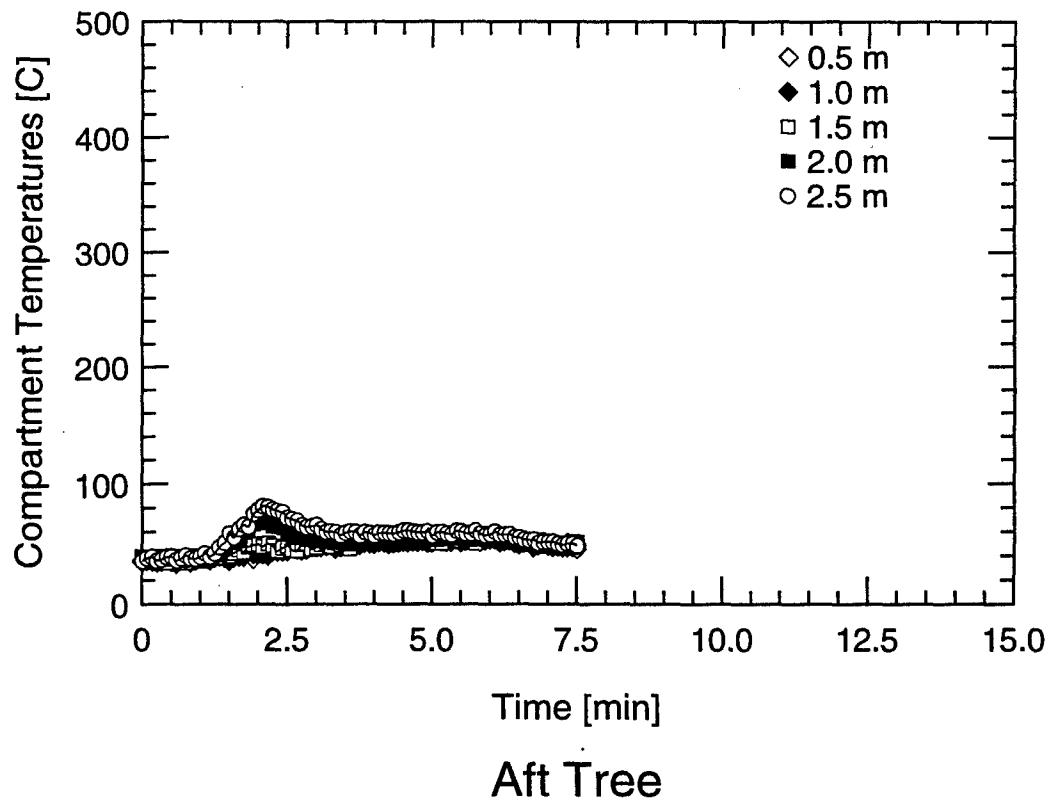
Water Mist System Flow Rate



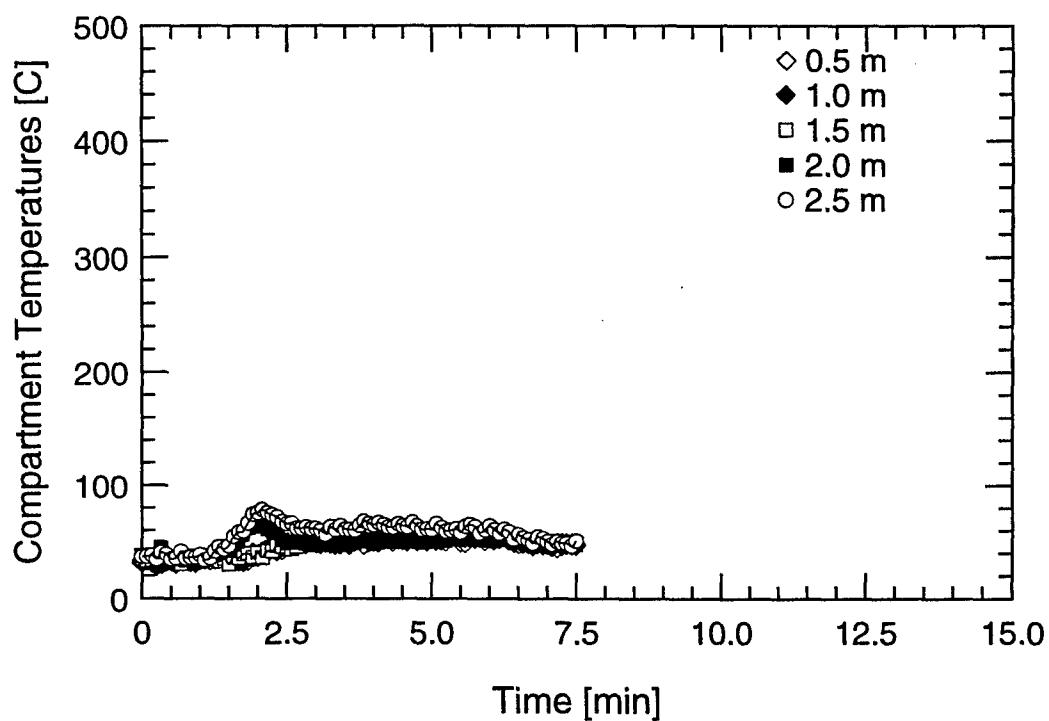
Water Mist System Pressure

TEST #57

B-345



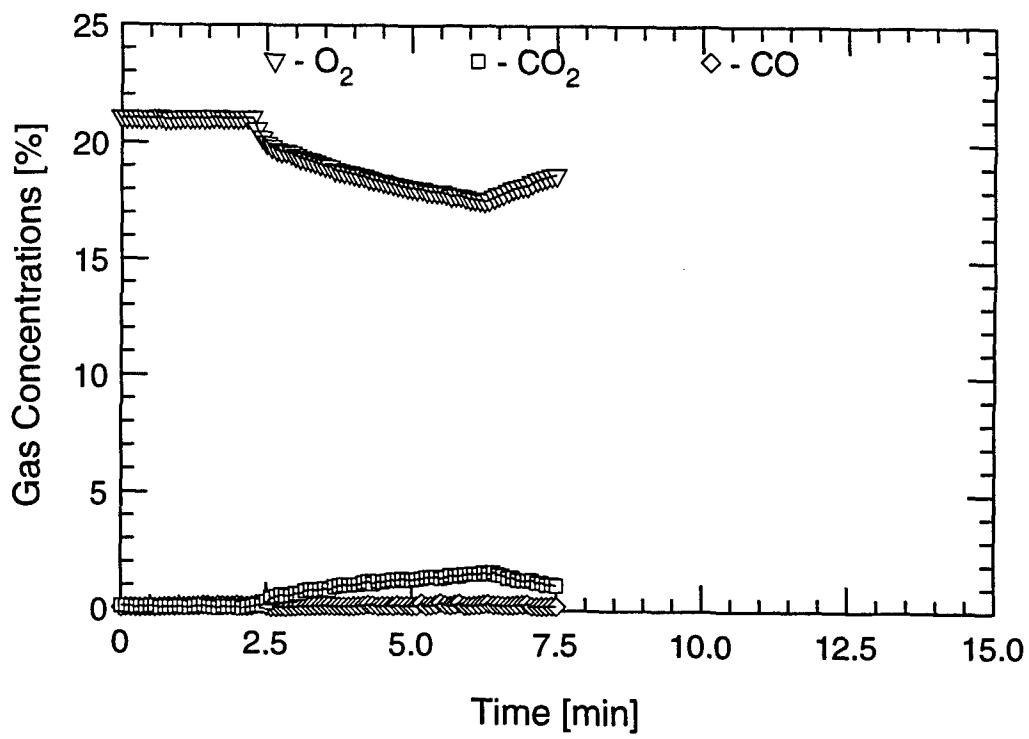
Aft Tree



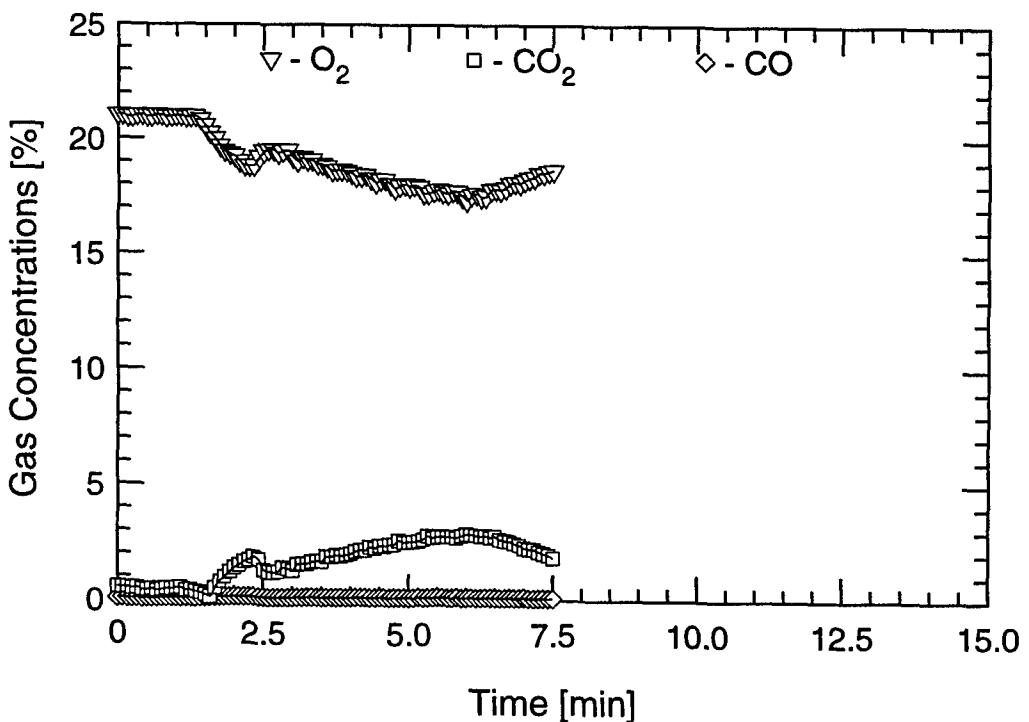
Forward Tree

TEST #58

B-346



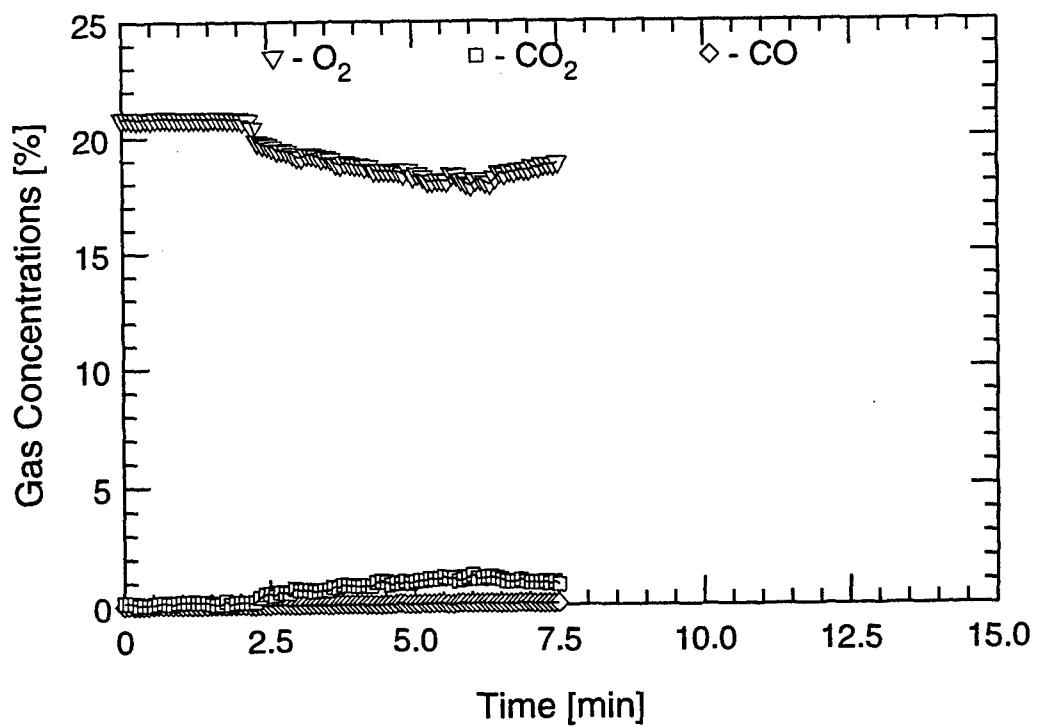
Aft Tree (Low)



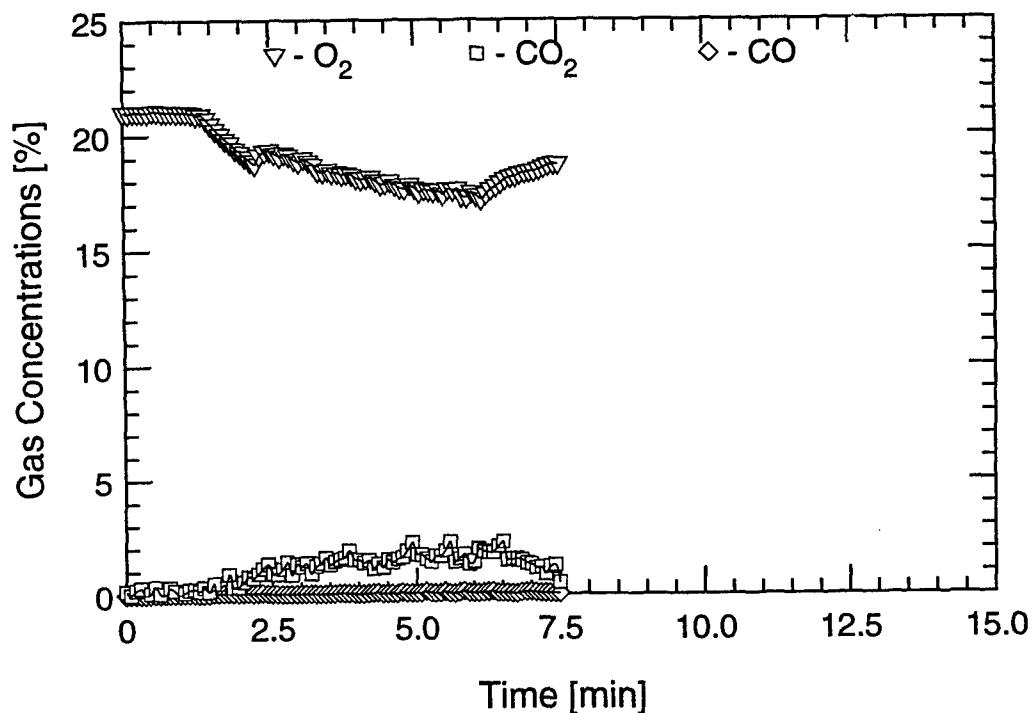
Aft Tree (High)

TEST #58

B-347



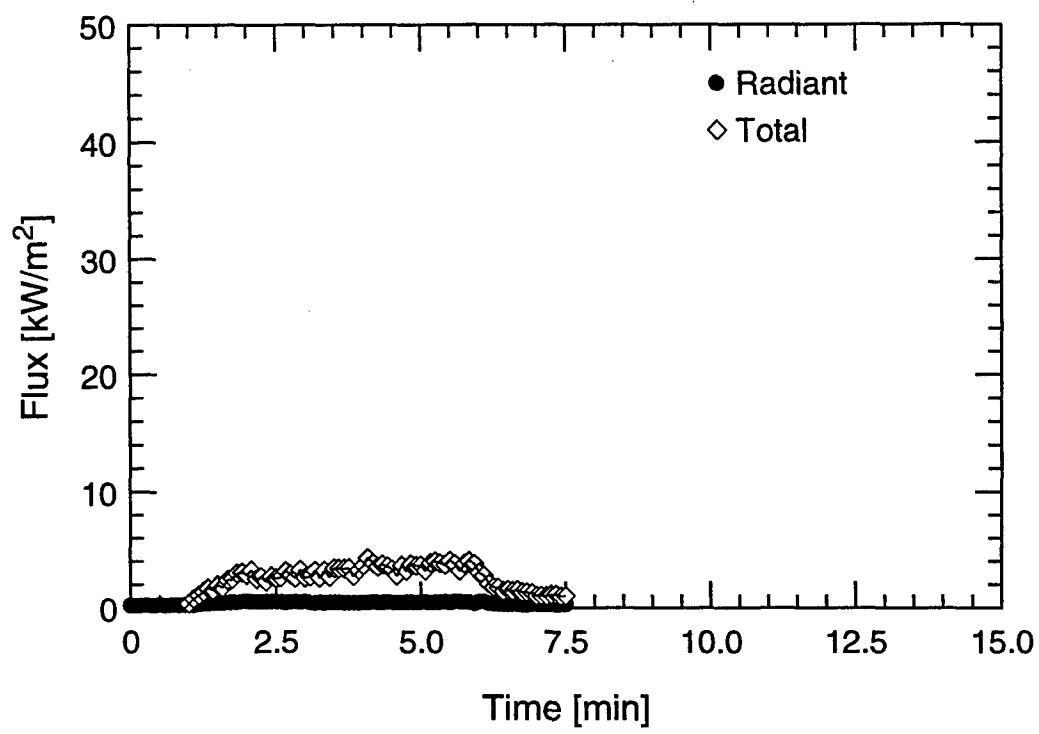
Forward Tree (Low)



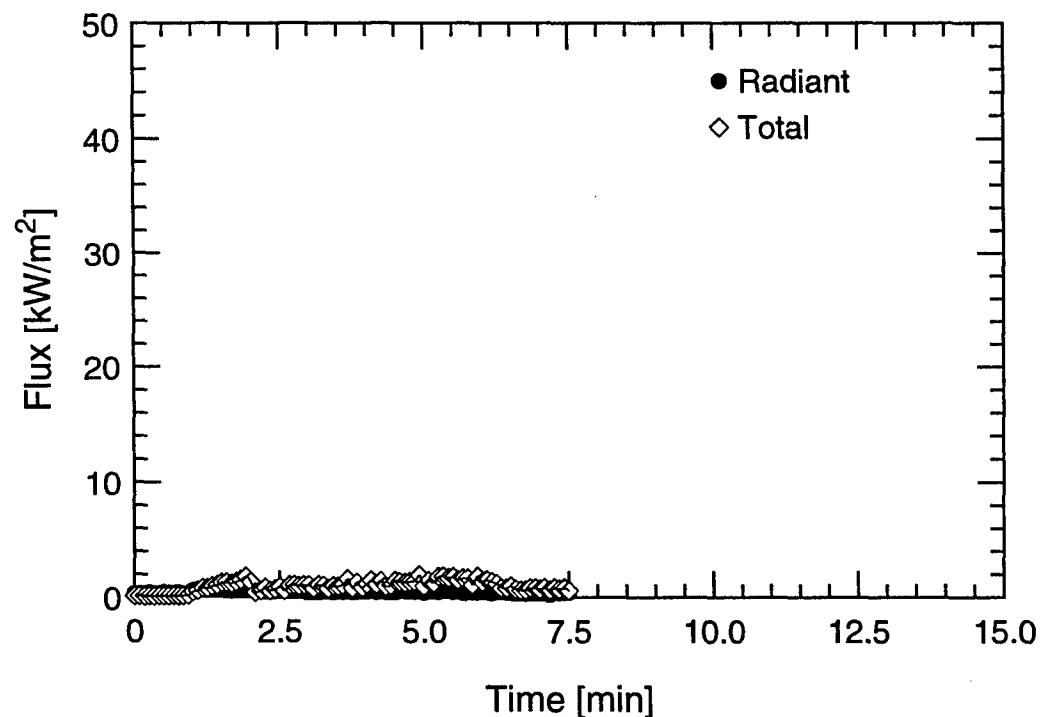
Forward Tree (High)

TEST #58

B-348



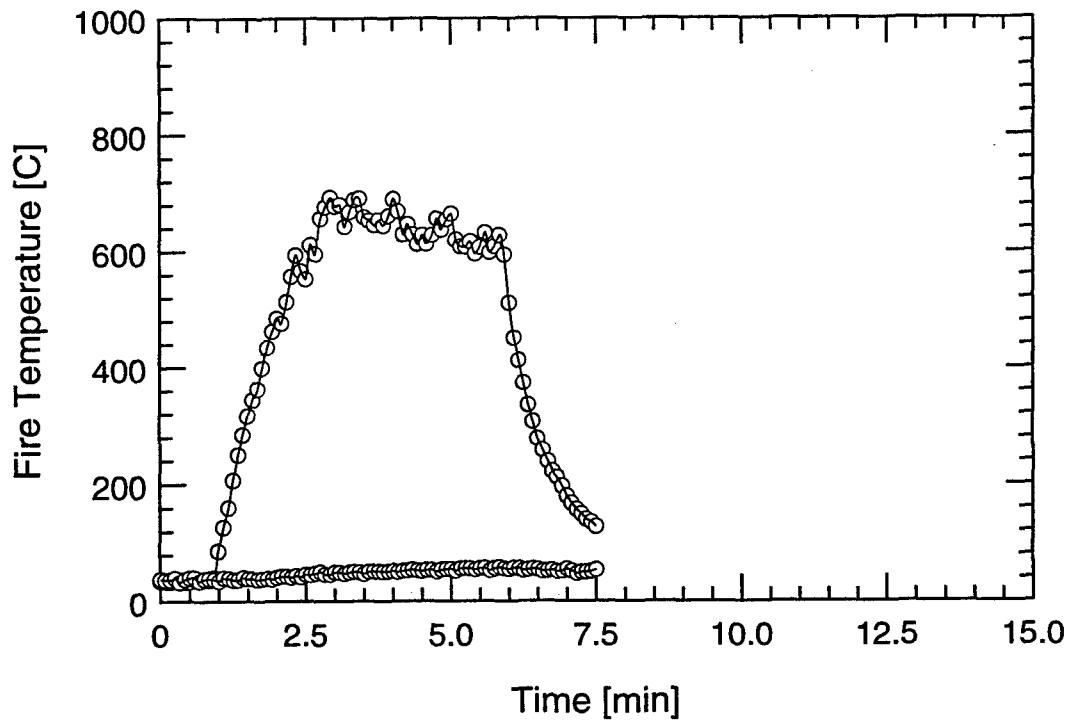
Overhead



Forward Bulkhead

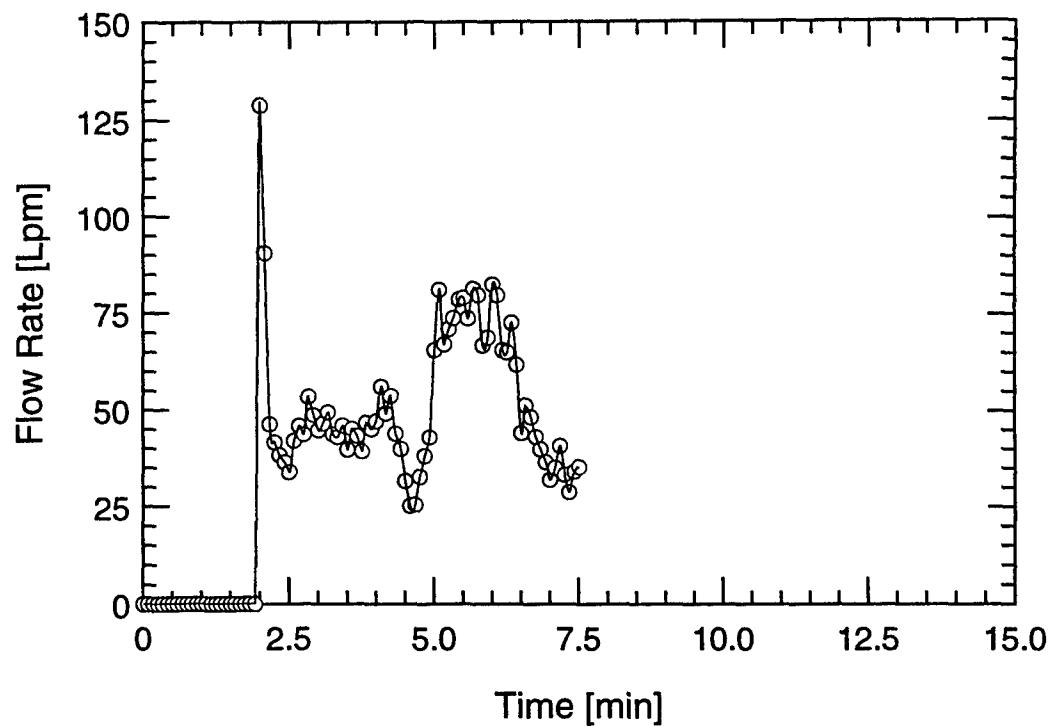
TEST #58

B-349

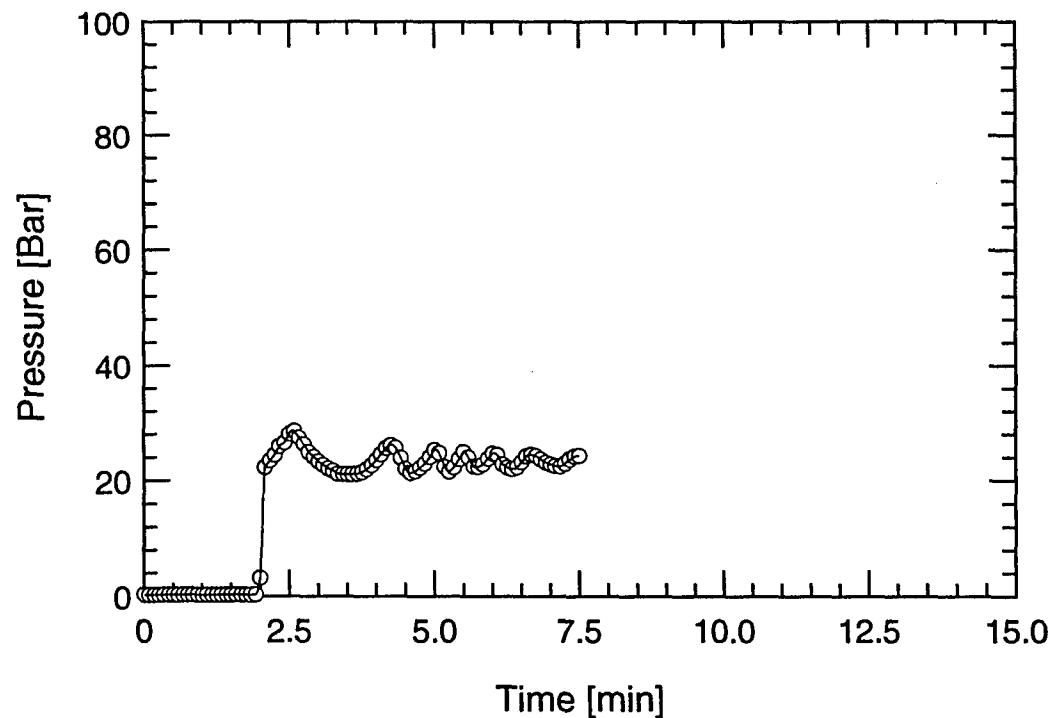


TEST #58

B-350



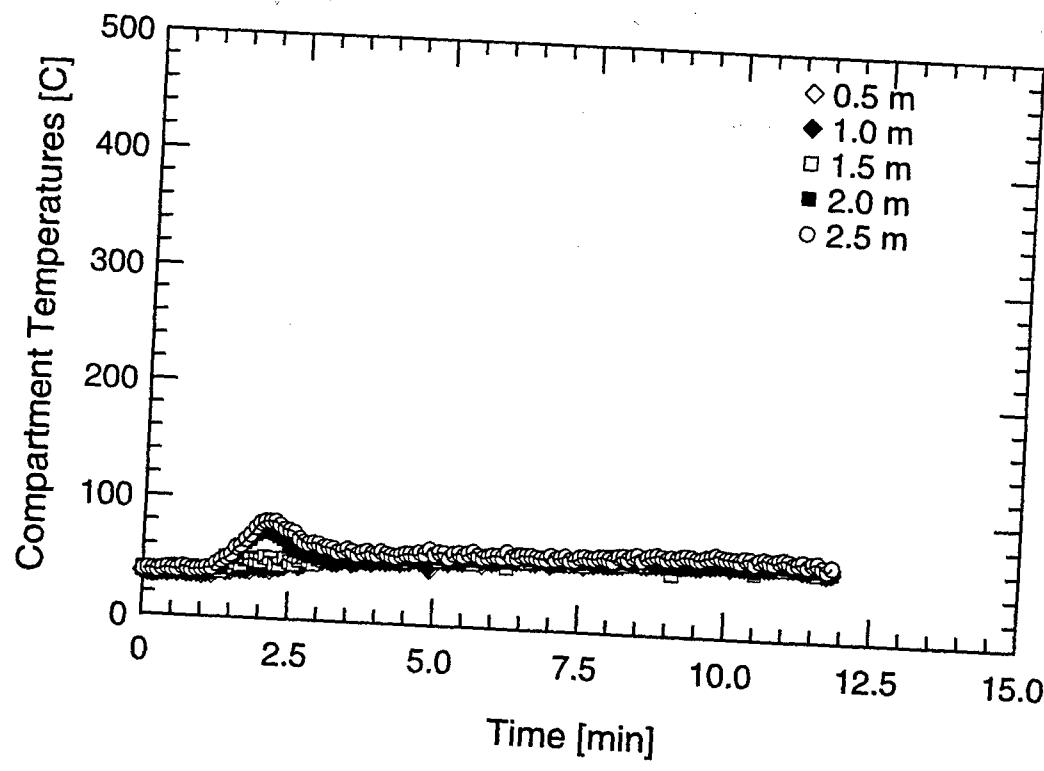
Water Mist System Flow Rate



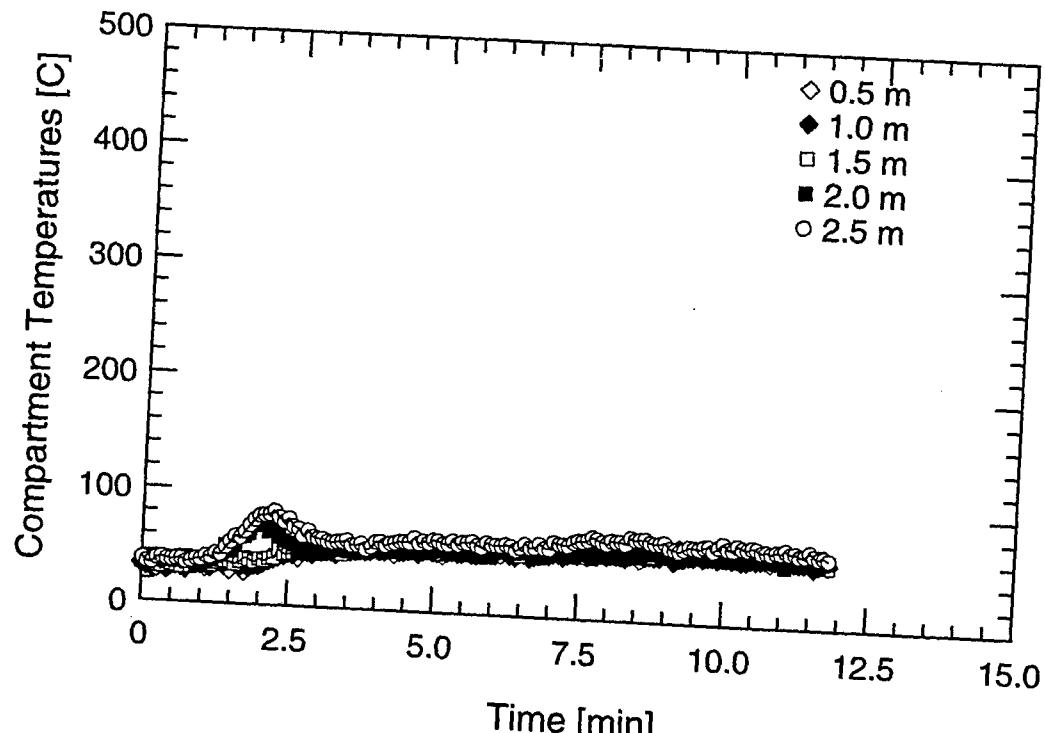
Water Mist System Pressure

TEST #58

B-351



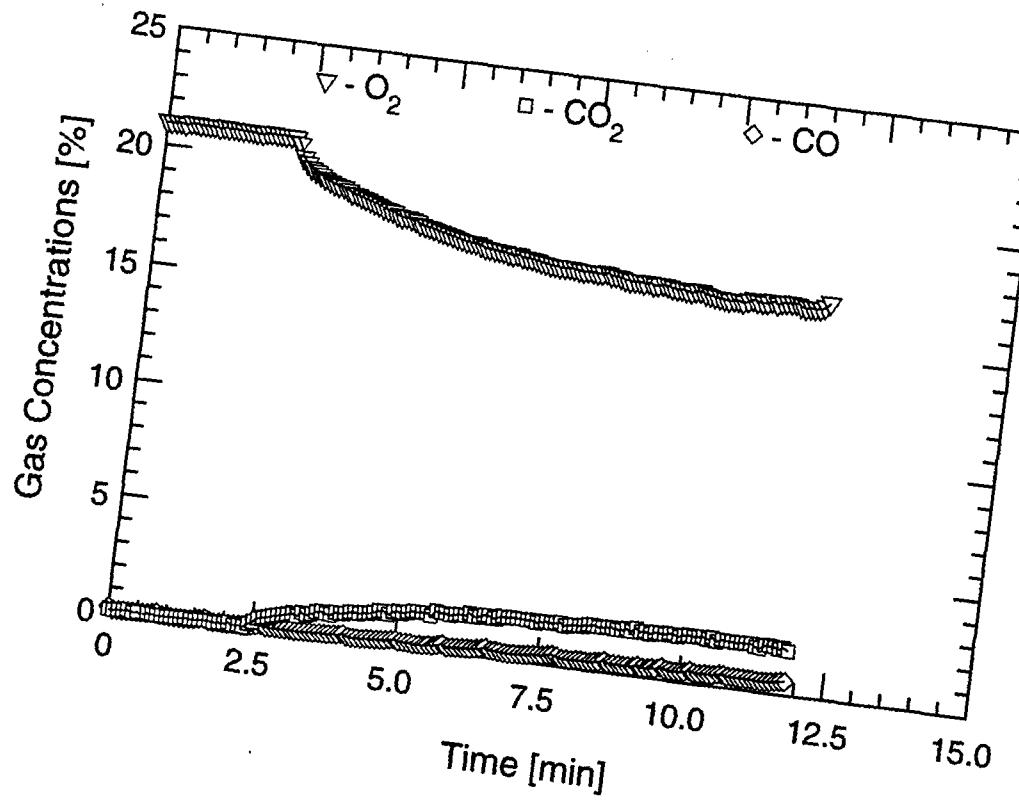
Aft Tree



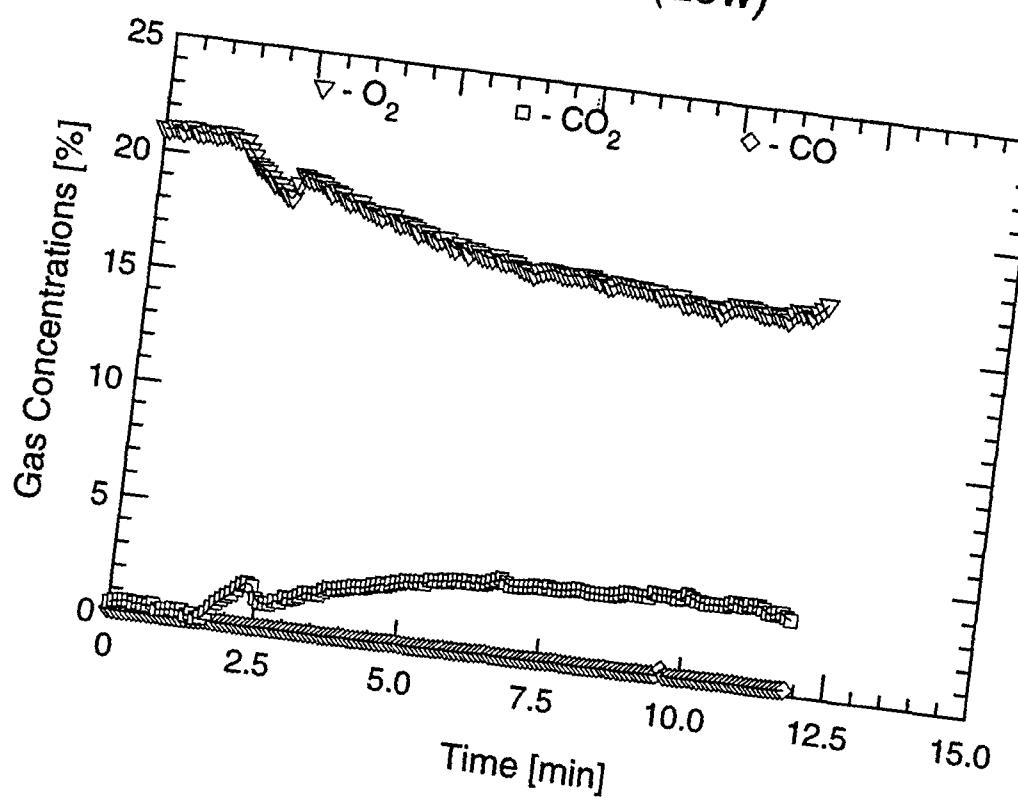
Forward Tree

TEST #59

B-352



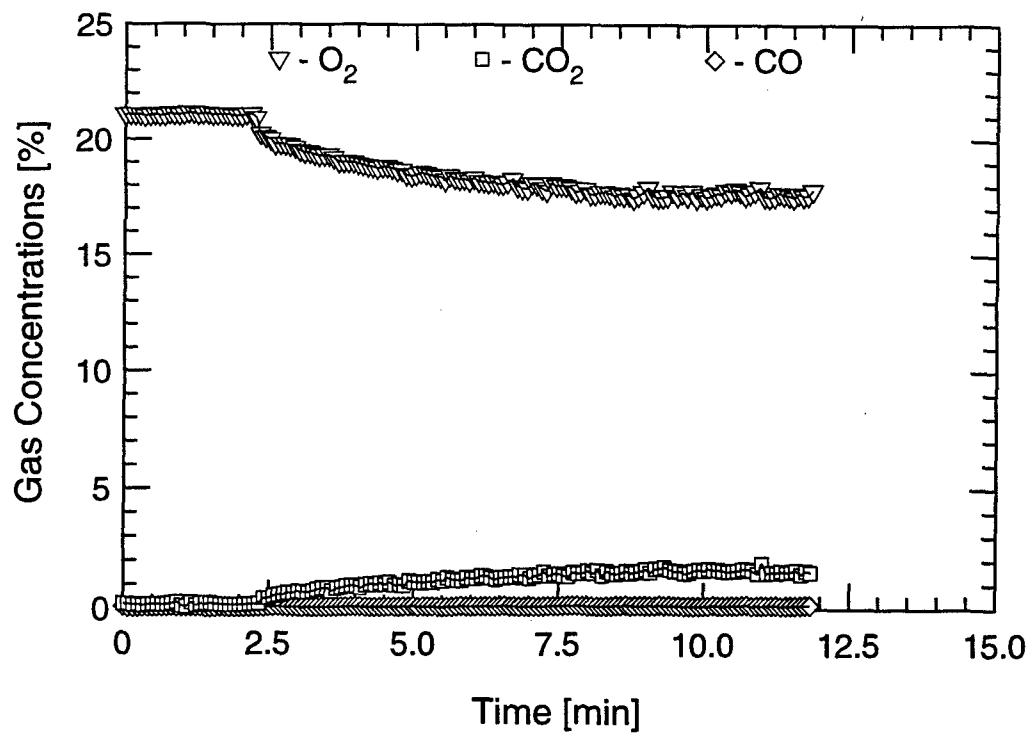
Aft Tree (Low)



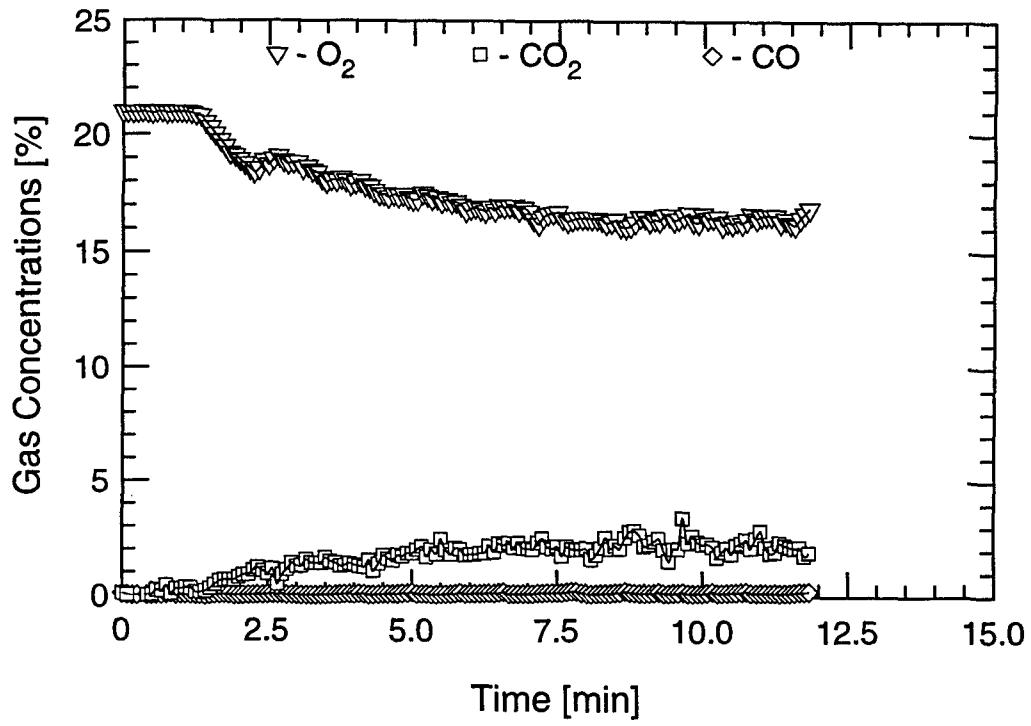
Aft Tree (High)

TEST #59

B-353



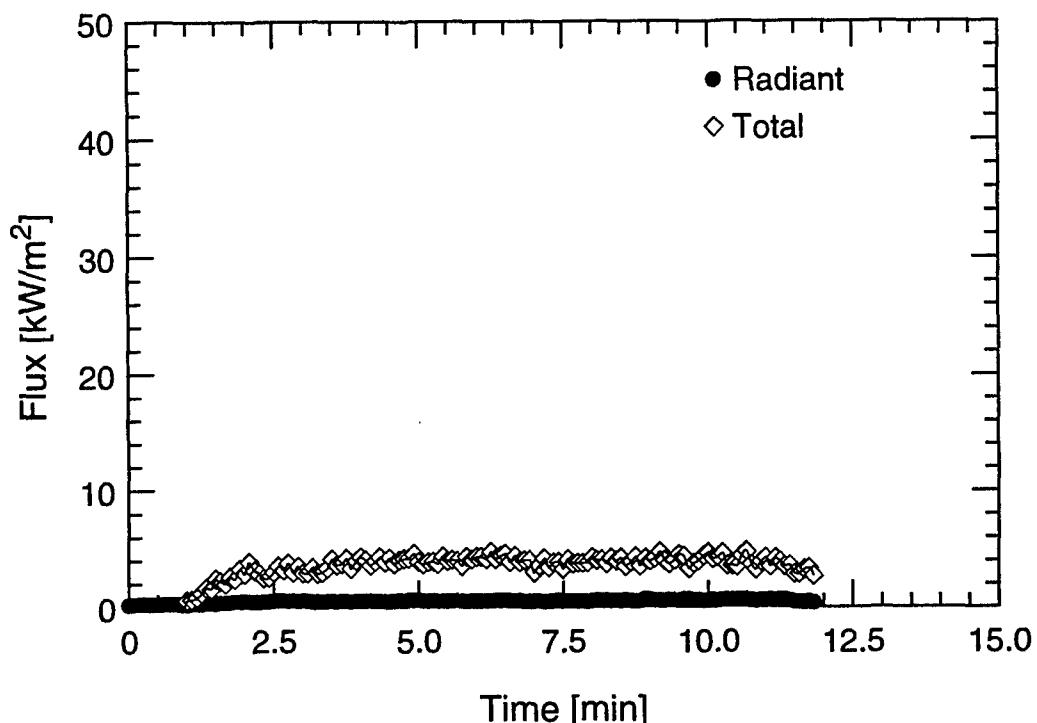
Forward Tree (Low)



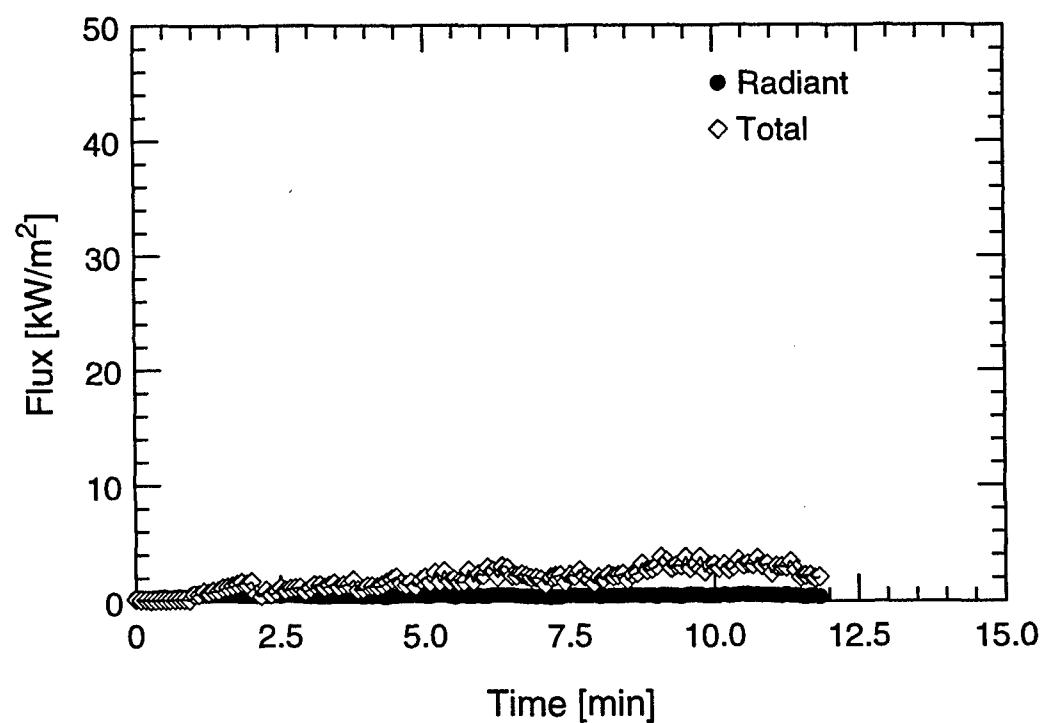
Forward Tree (High)

TEST #59

B-354



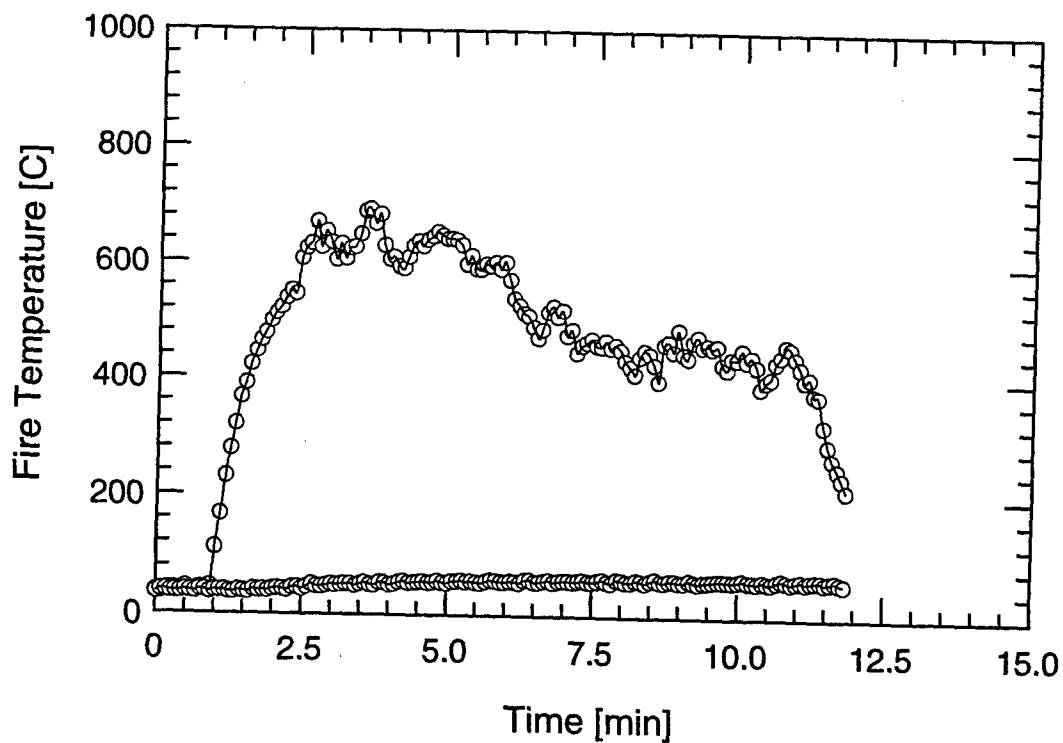
Overhead



Forward Bulkhead

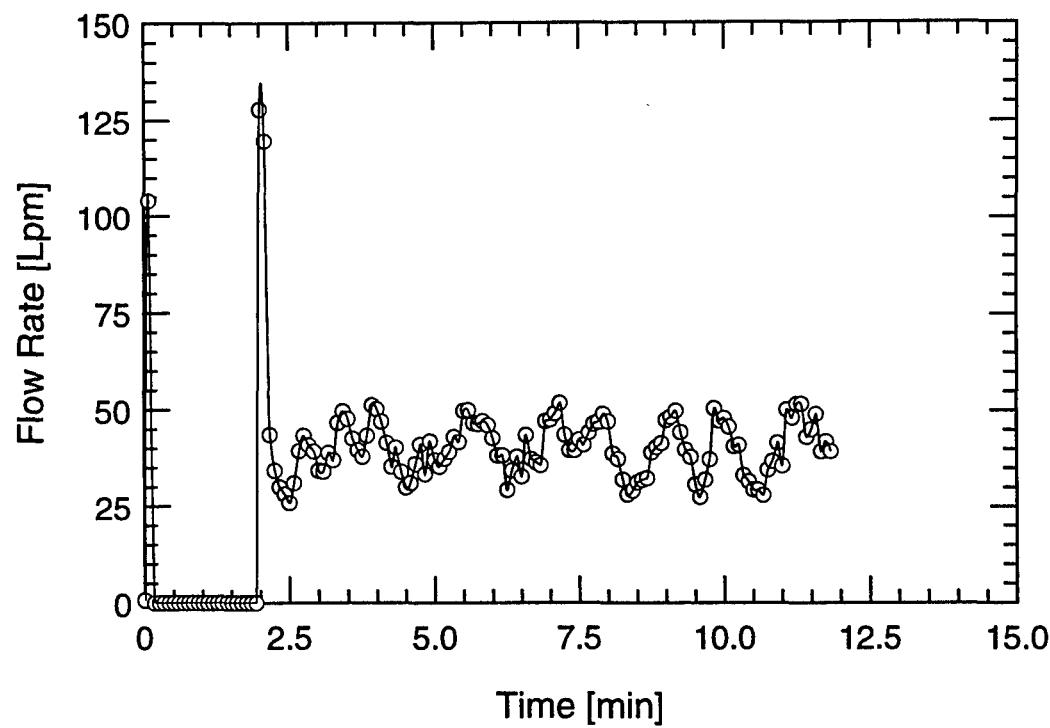
TEST #59

B-355

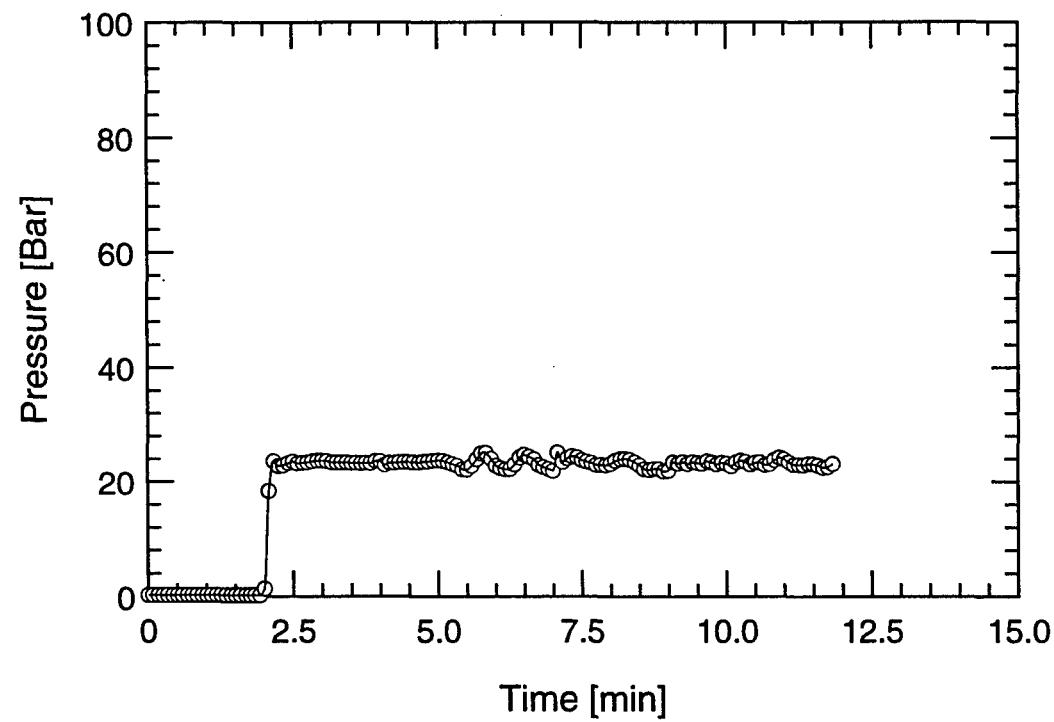


TEST #59

B-356

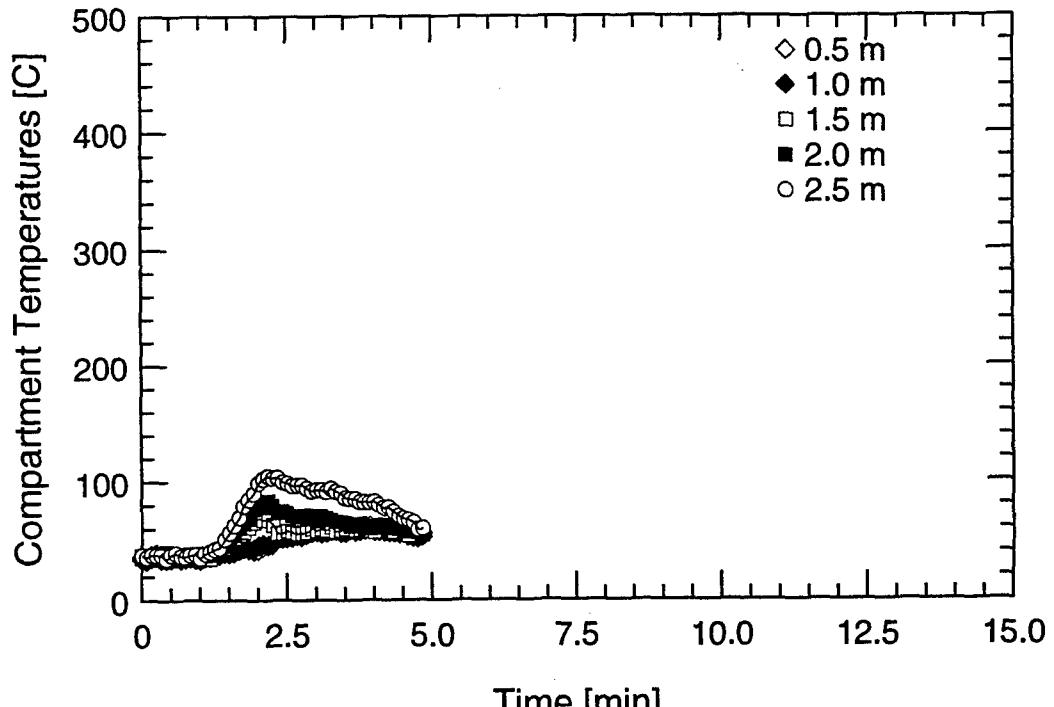


Water Mist System Flow Rate

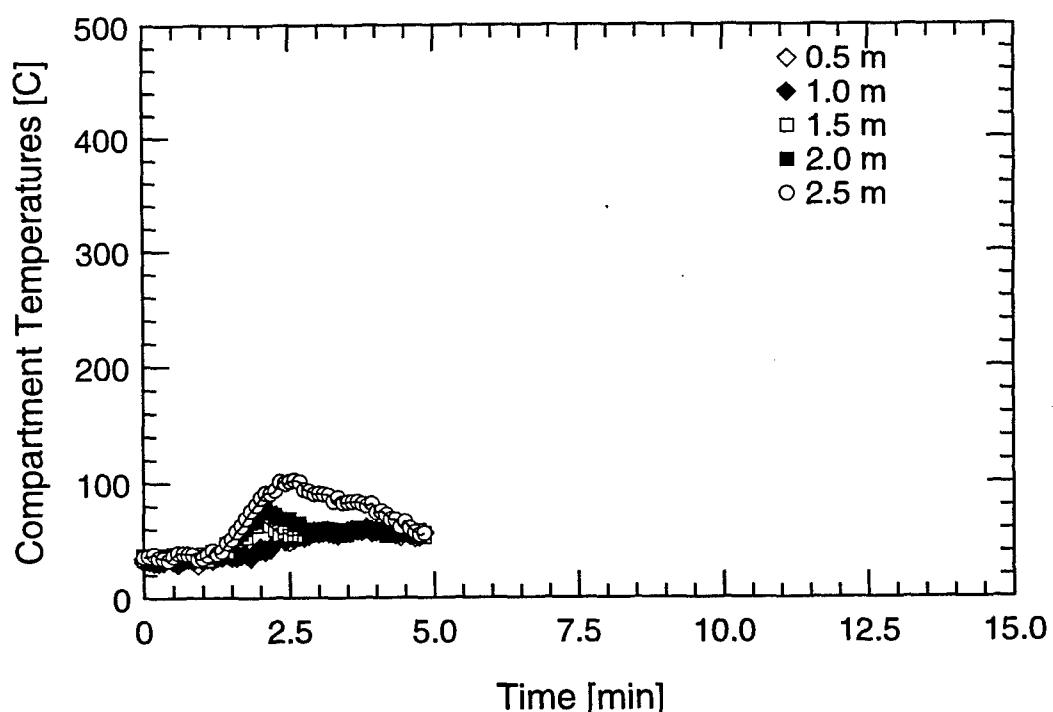


Water Mist System Pressure

TEST #59



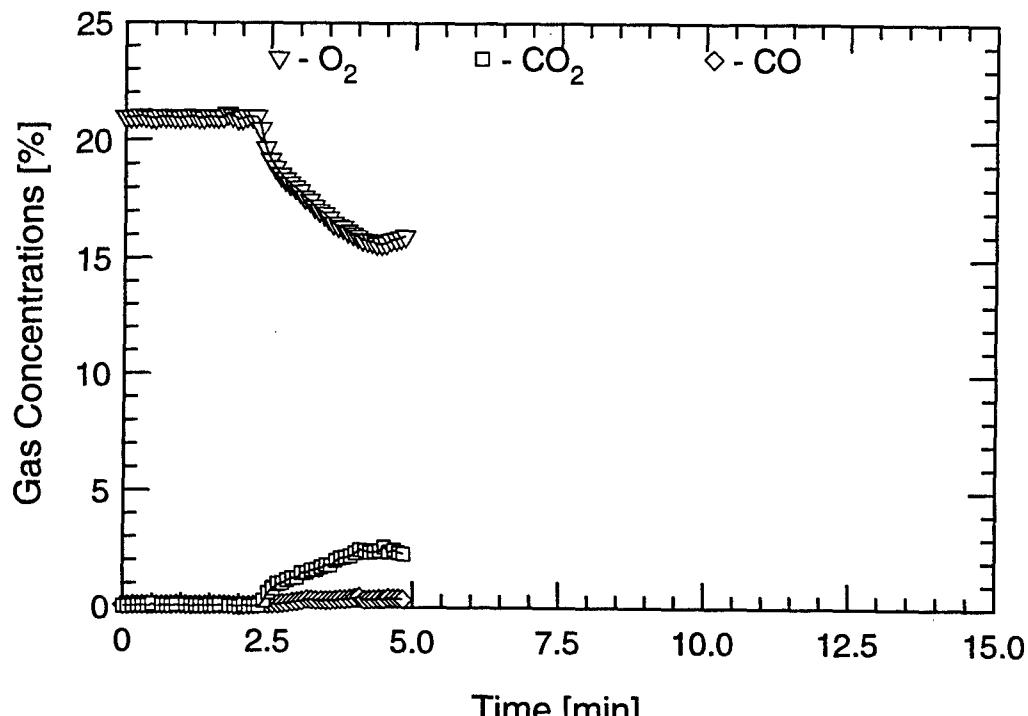
Aft Tree



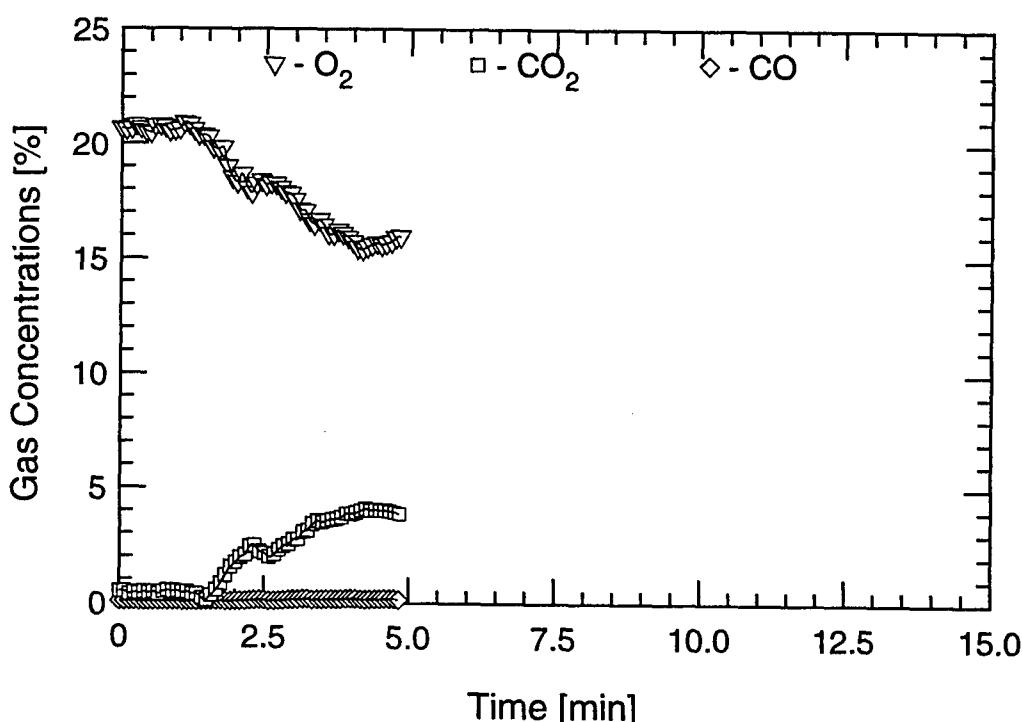
Forward Tree

TEST #60

B-358



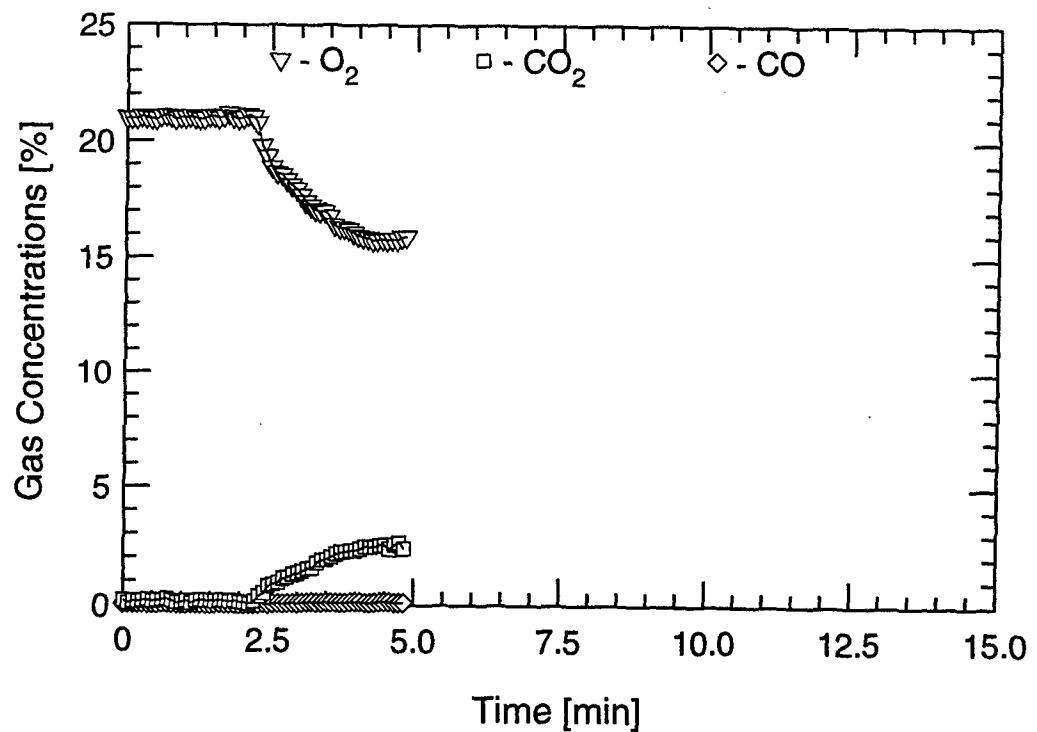
Aft Tree (Low)



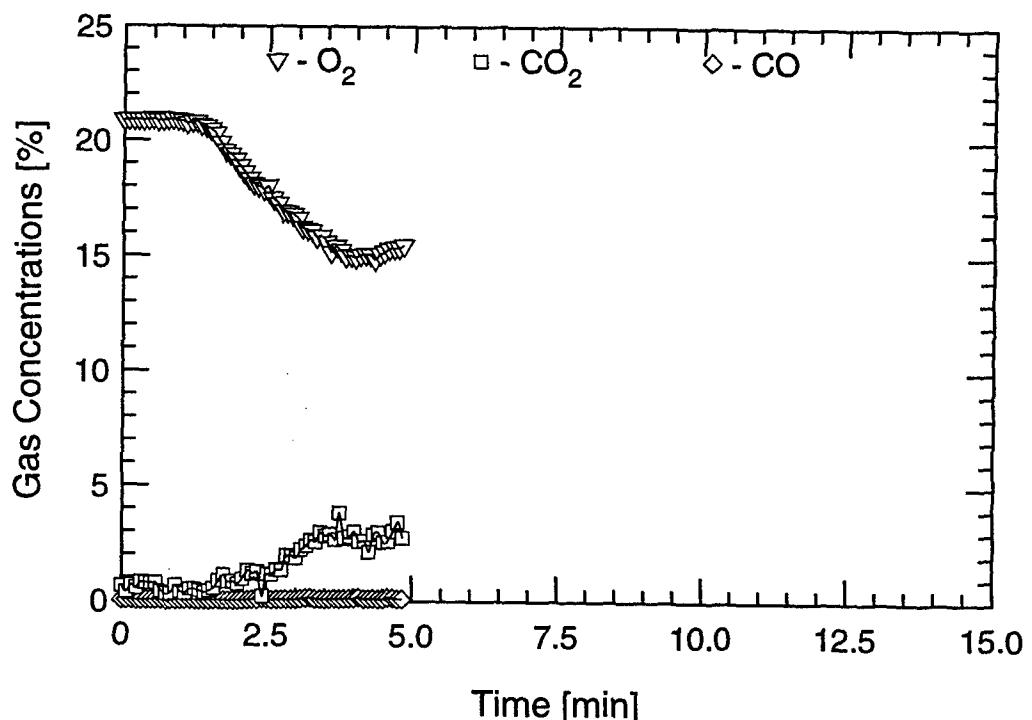
Aft Tree (High)

TEST #60

B-359



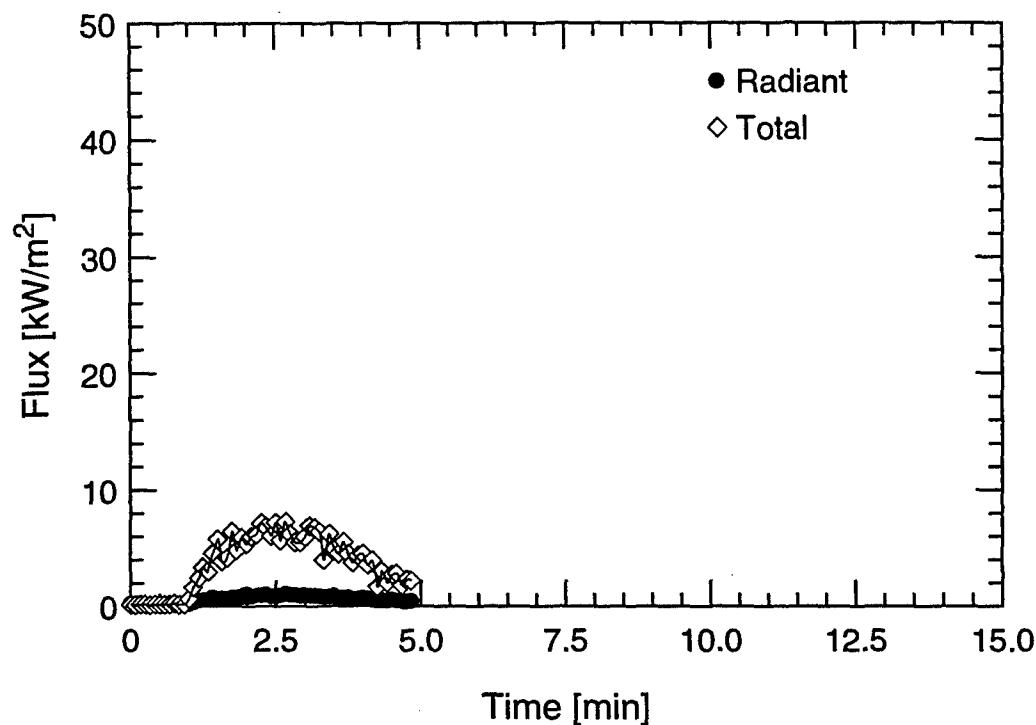
Forward Tree (Low)



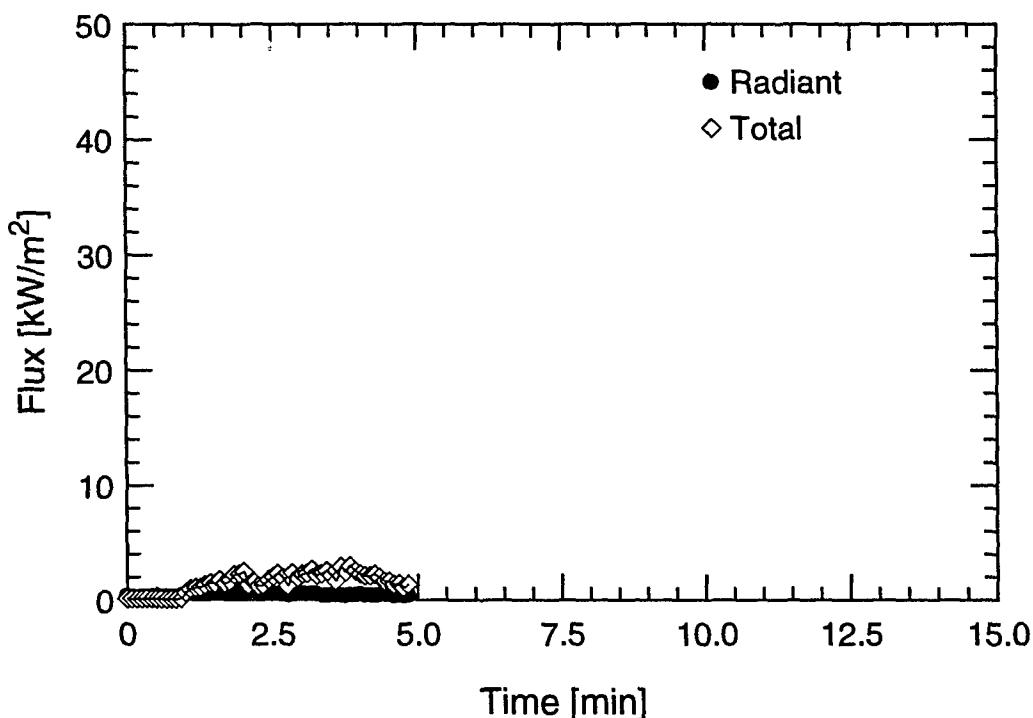
Forward Tree (High)

TEST #60

B-360



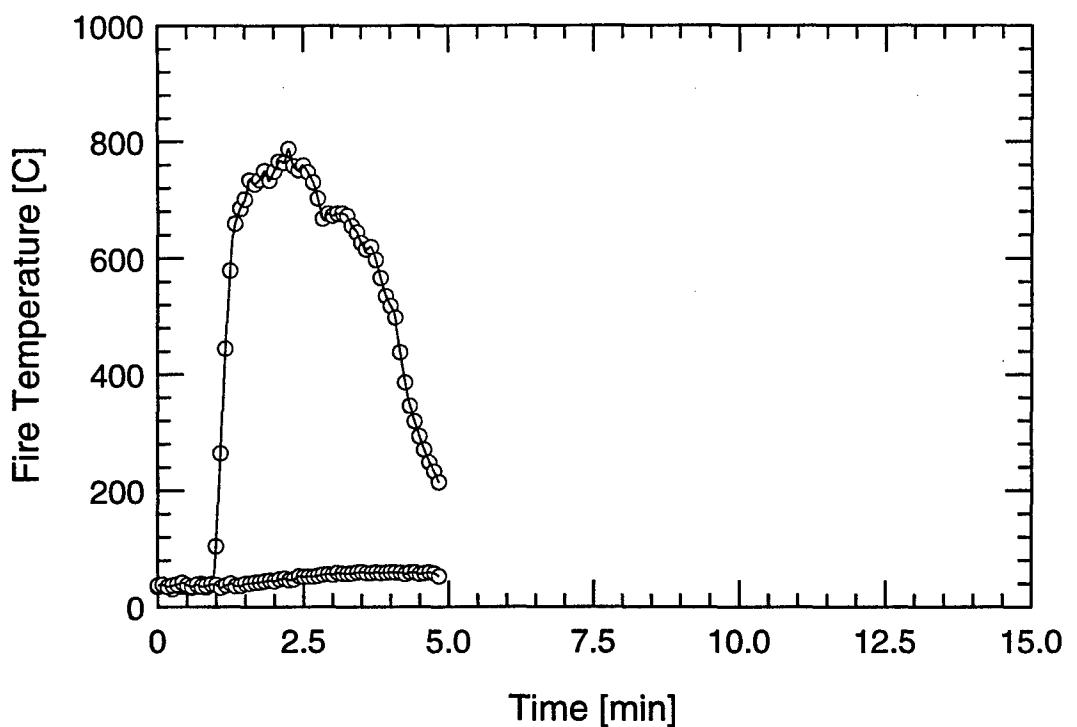
Overhead



Forward Bulkhead

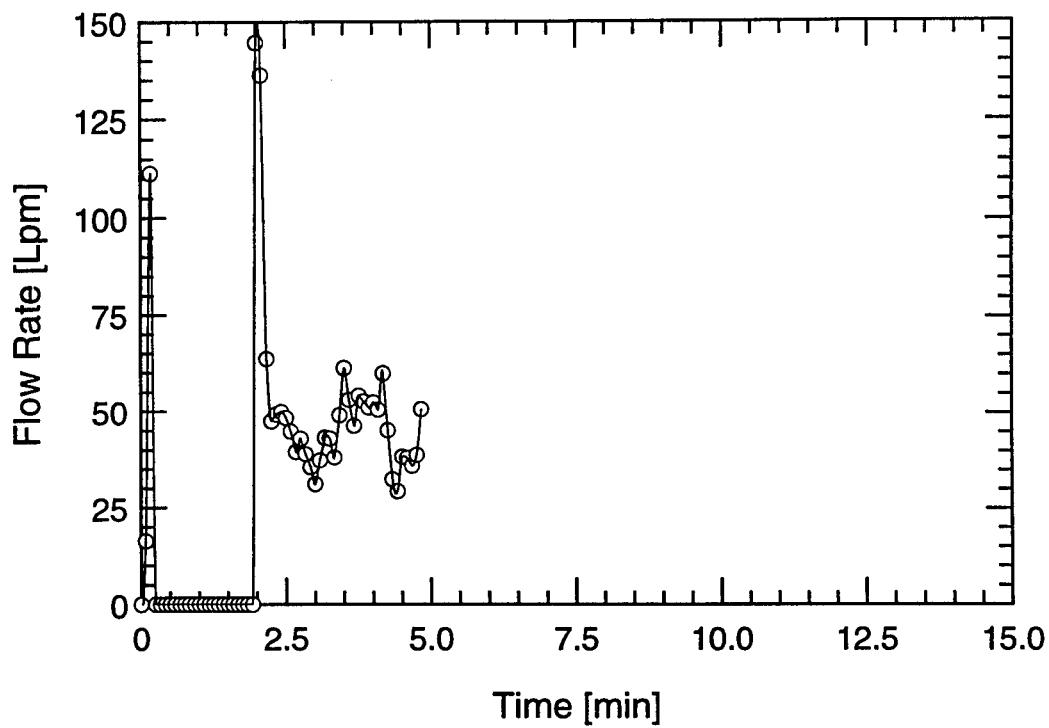
TEST #60

B-361

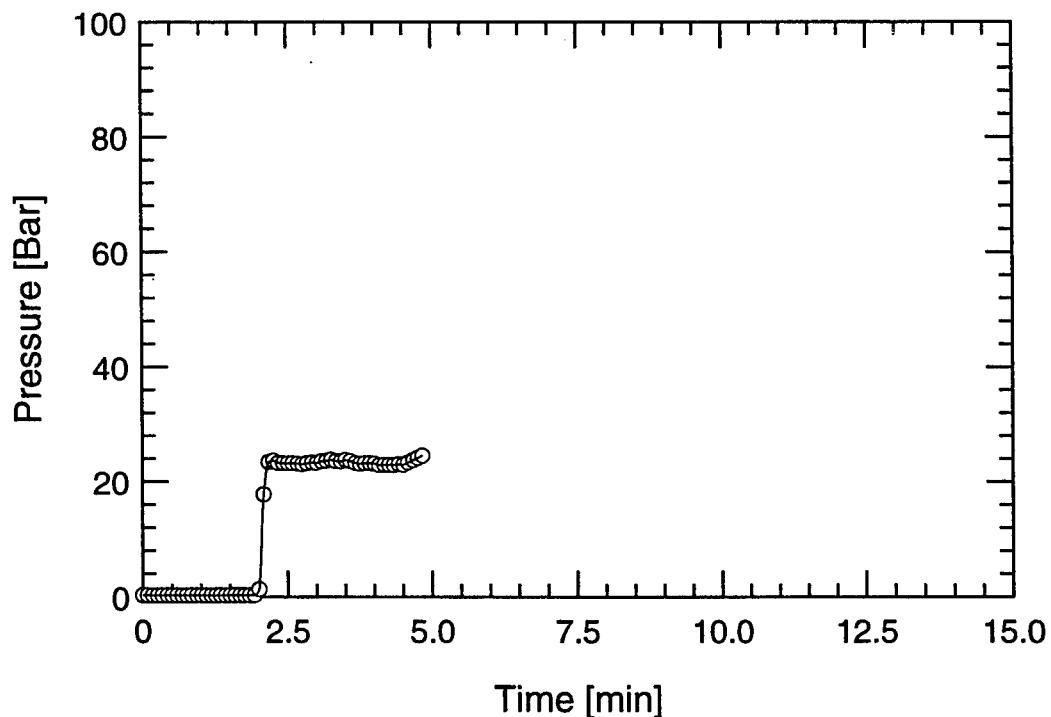


TEST #60

B-362



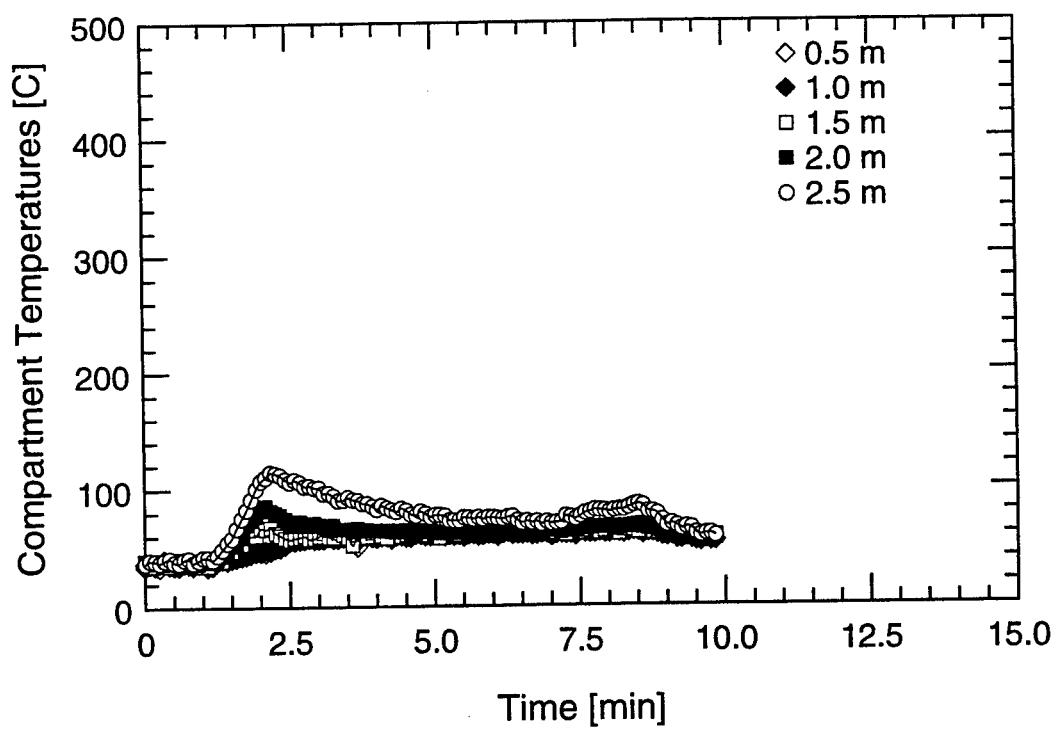
Water Mist System Flow Rate



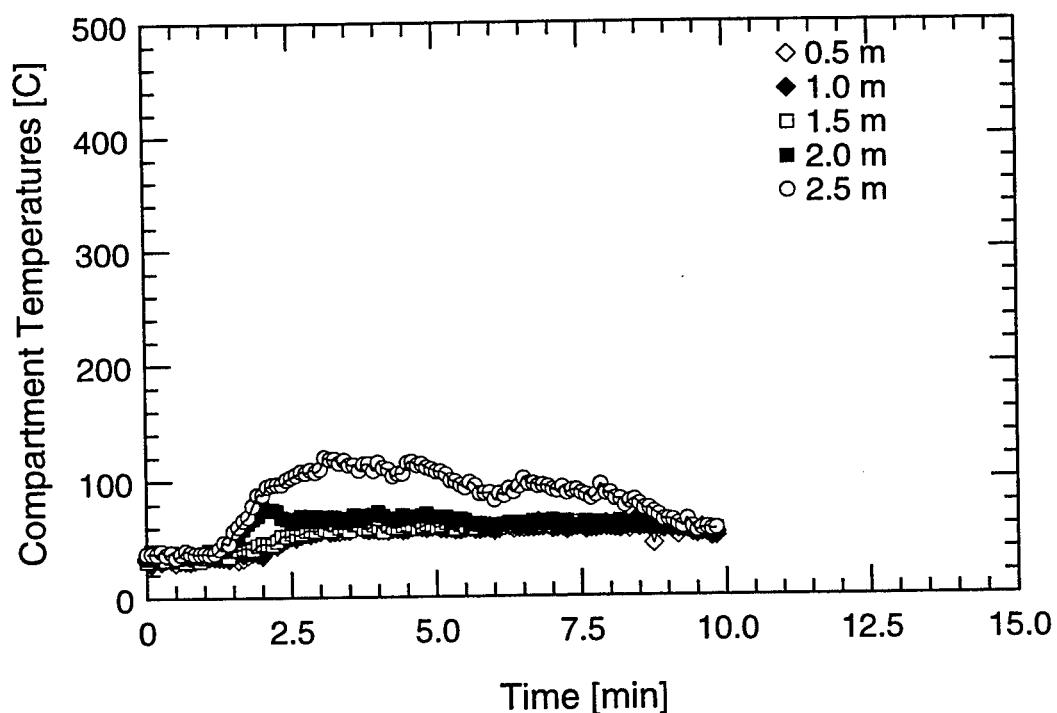
Water Mist System Pressure

TEST #60

B-363

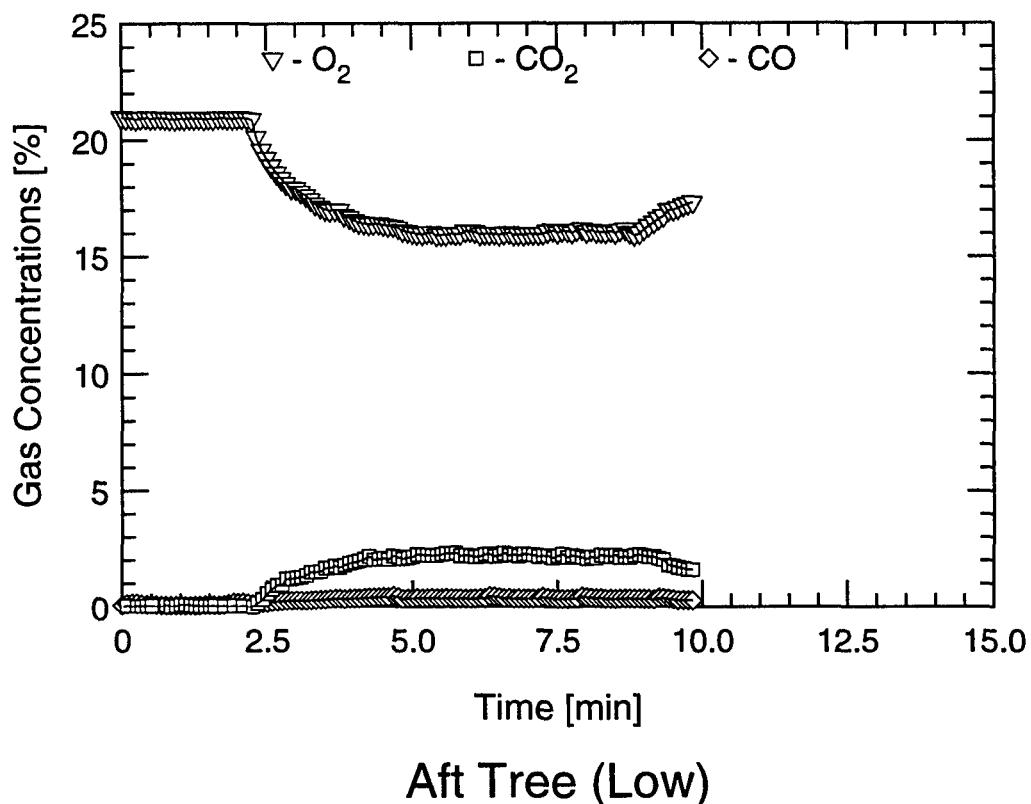


Aft Tree

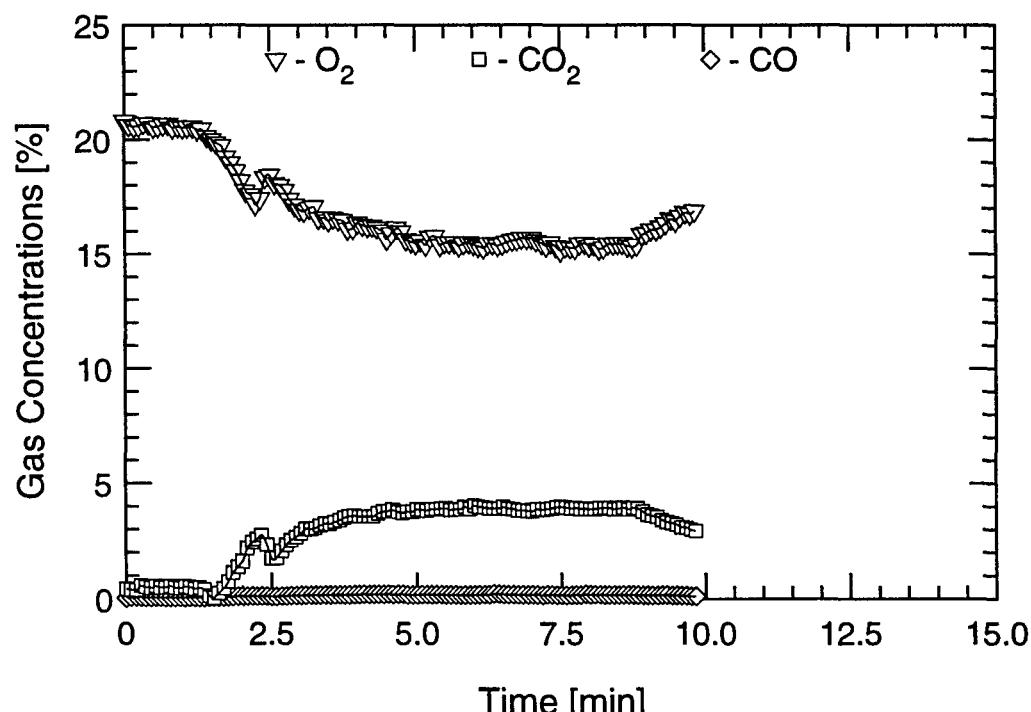


Forward Tree

TEST #61



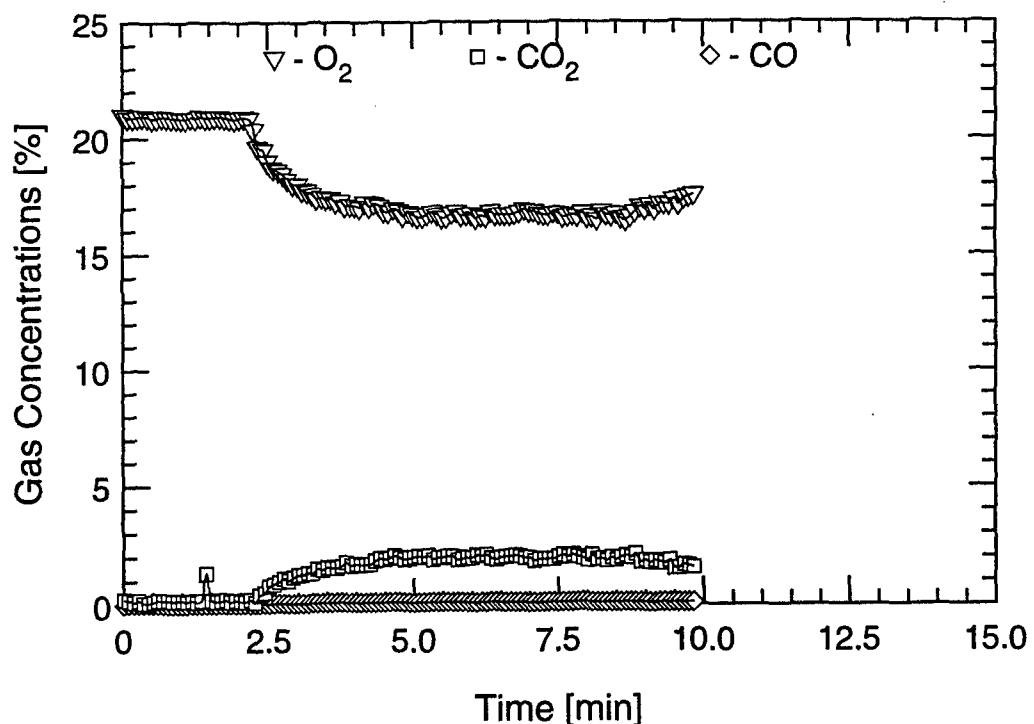
Aft Tree (Low)



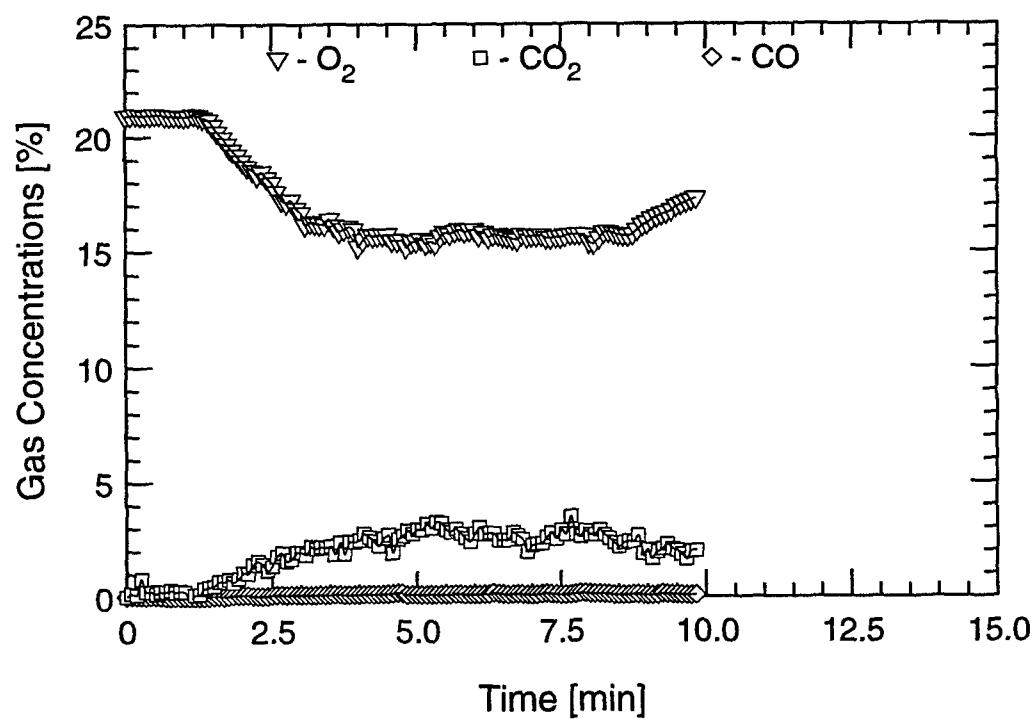
Aft Tree (High)

TEST #61

B-365



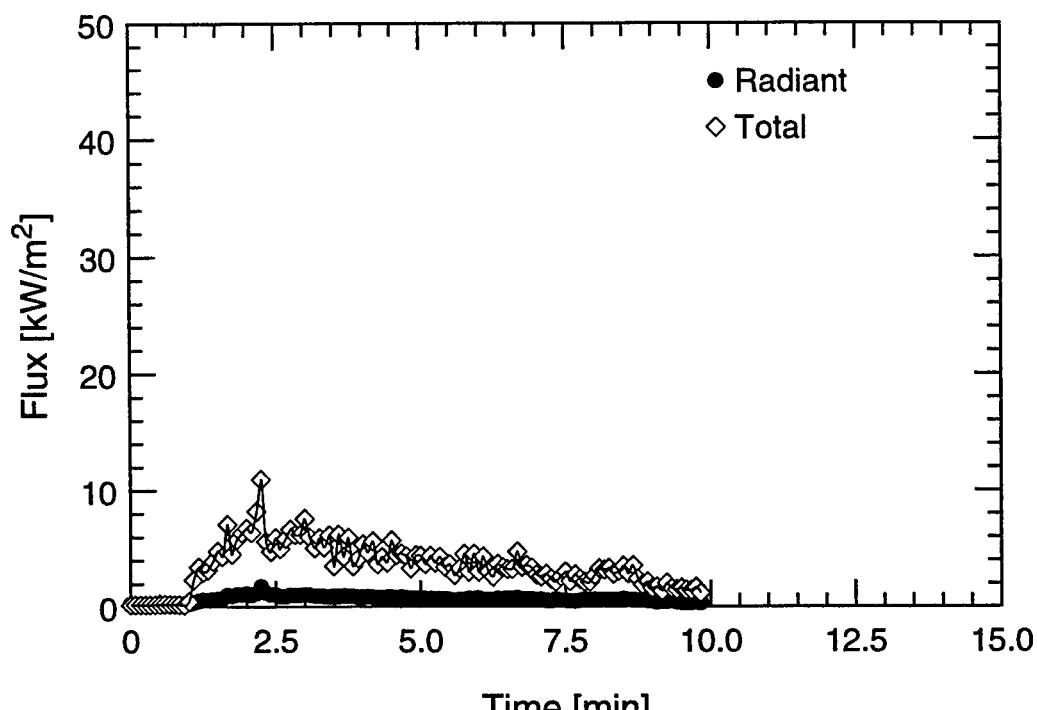
Forward Tree (Low)



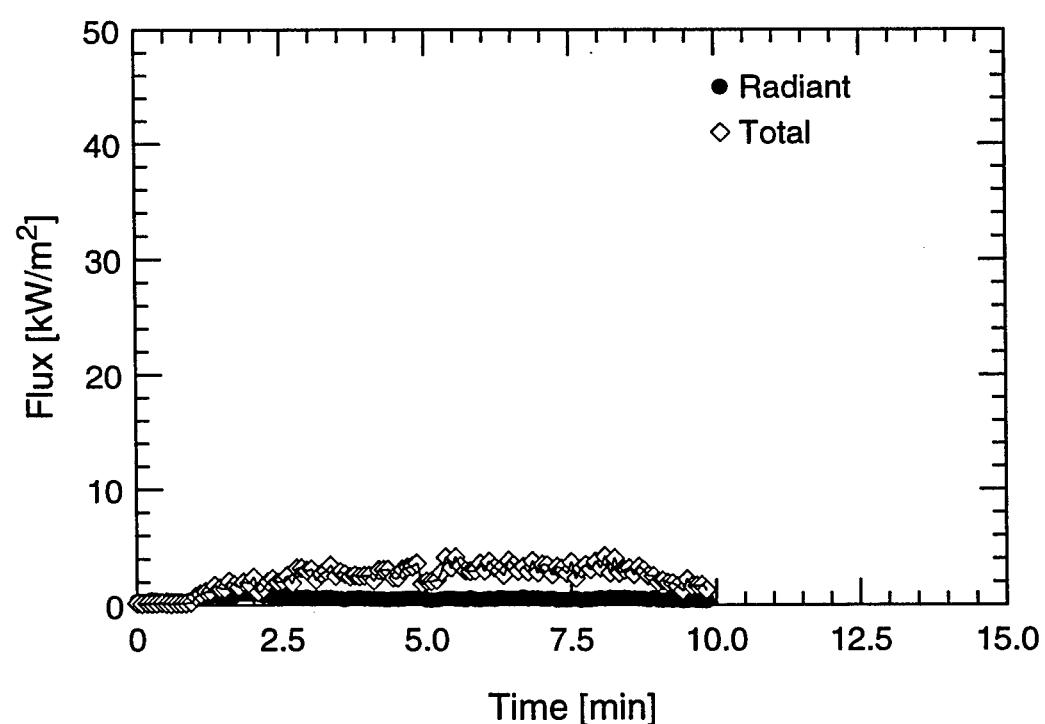
Forward Tree (High)

TEST #61

B-366



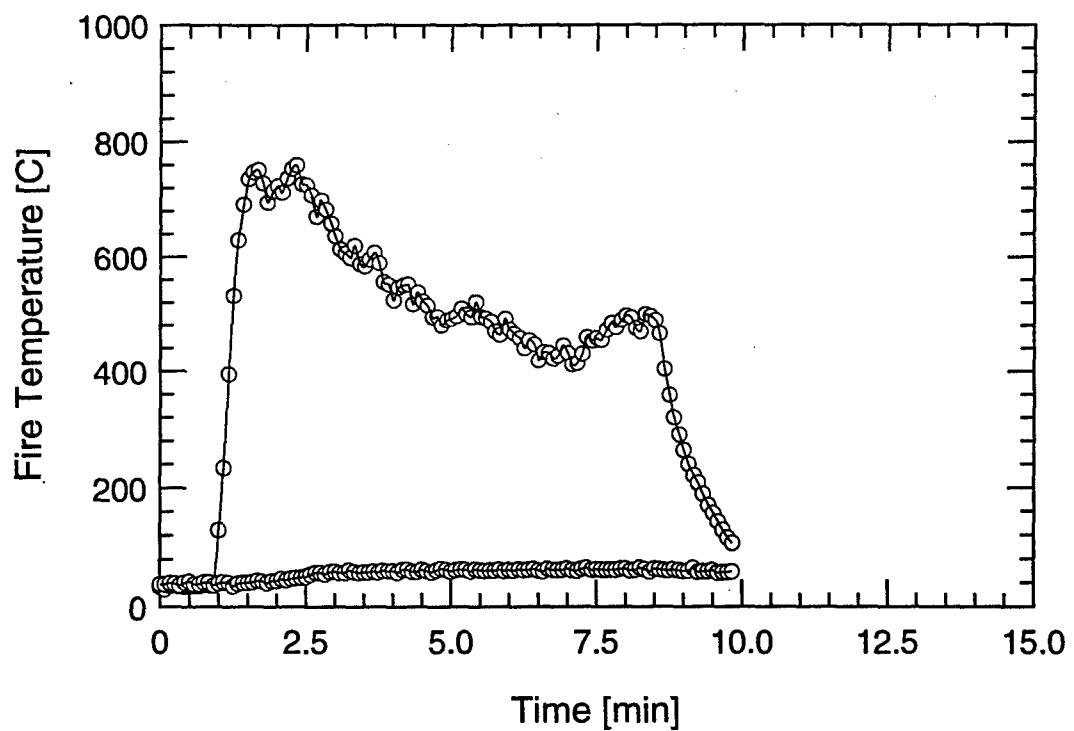
Overhead



Forward Bulkhead

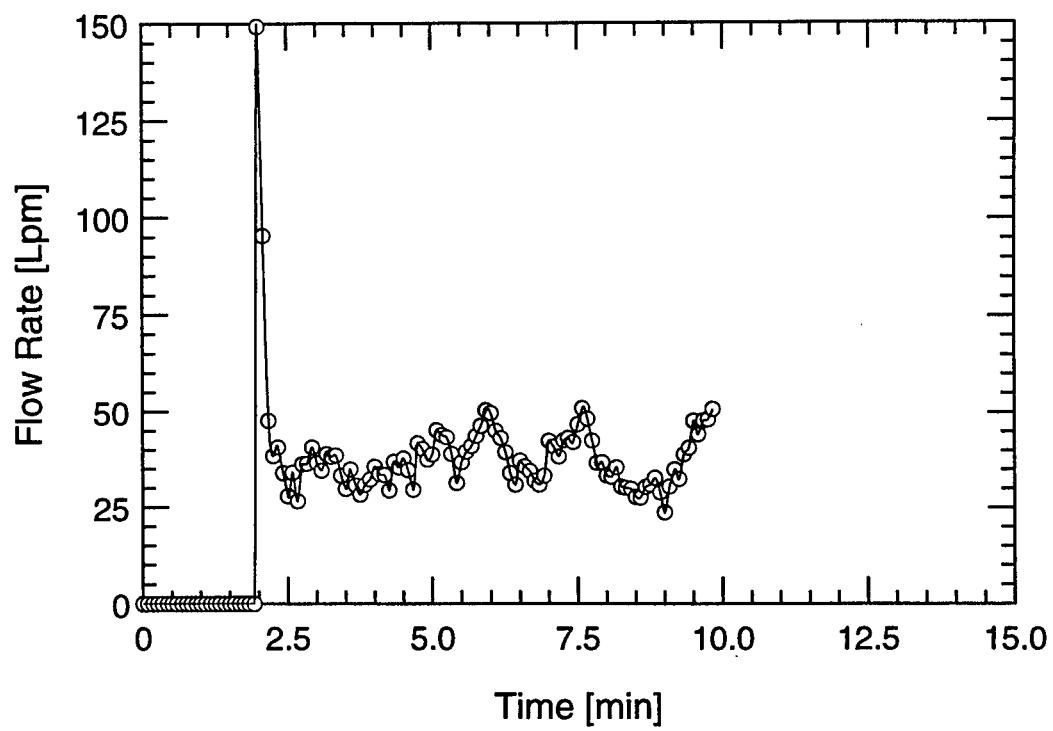
TEST #61

B-367

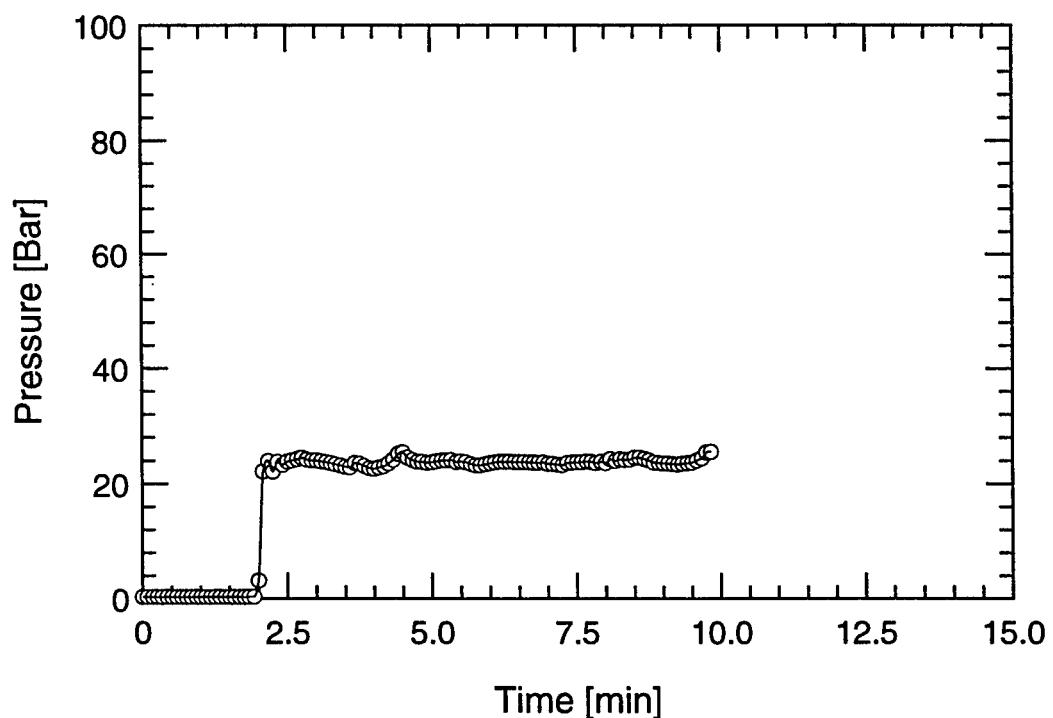


TEST #61

B-368



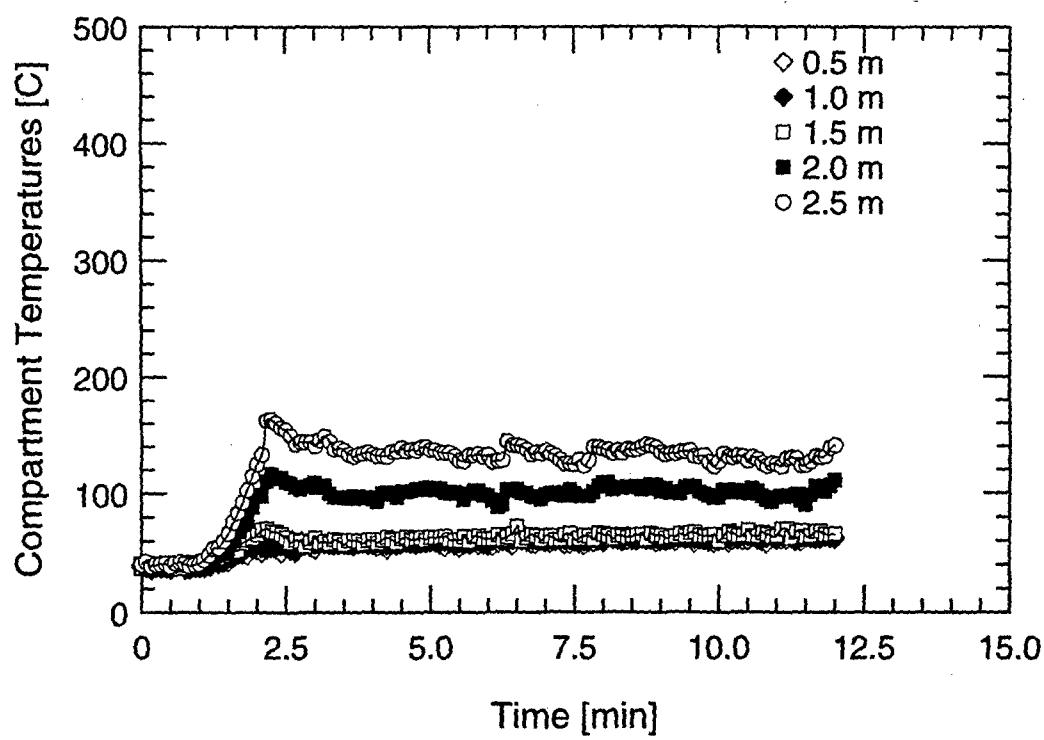
Water Mist System Flow Rate



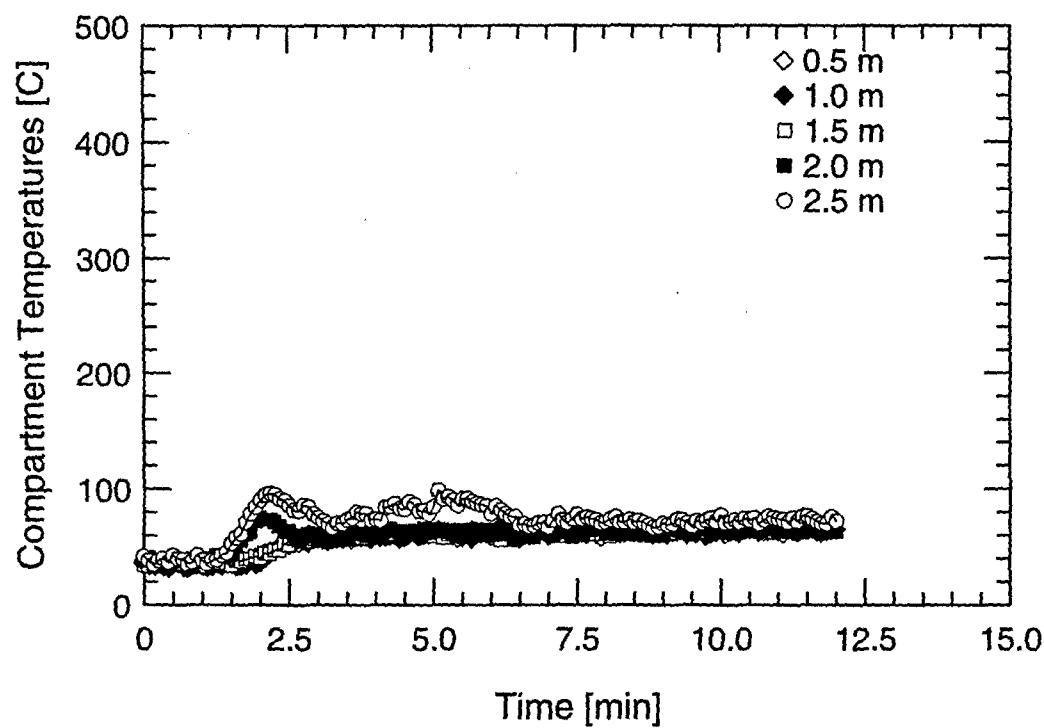
Water Mist System Pressure

TEST #61

B-369



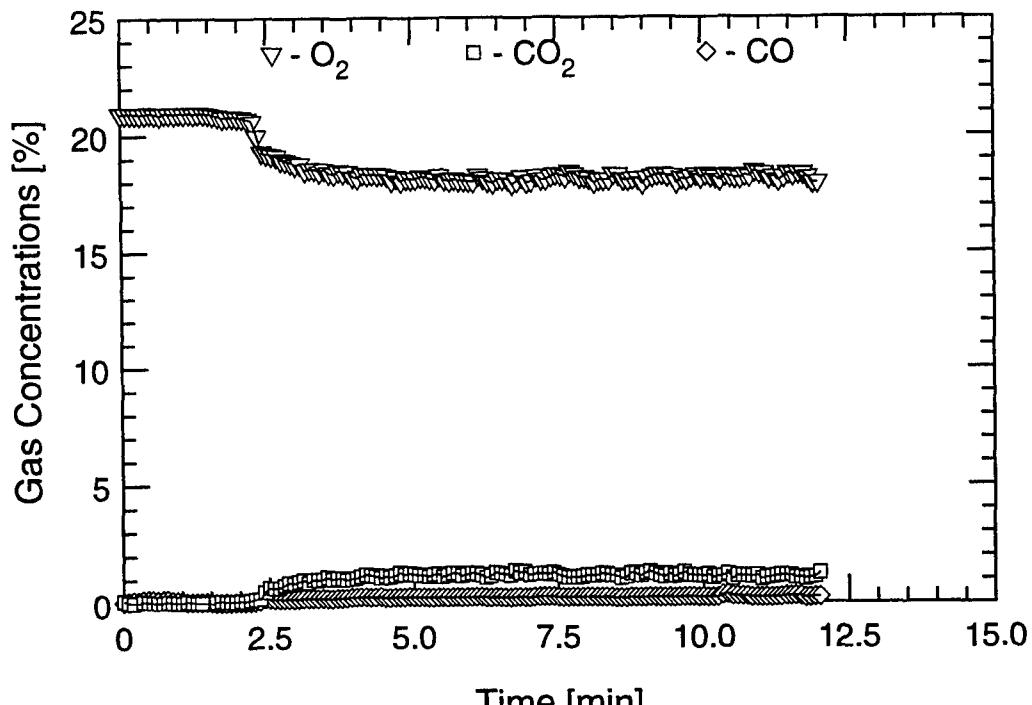
Aft Tree



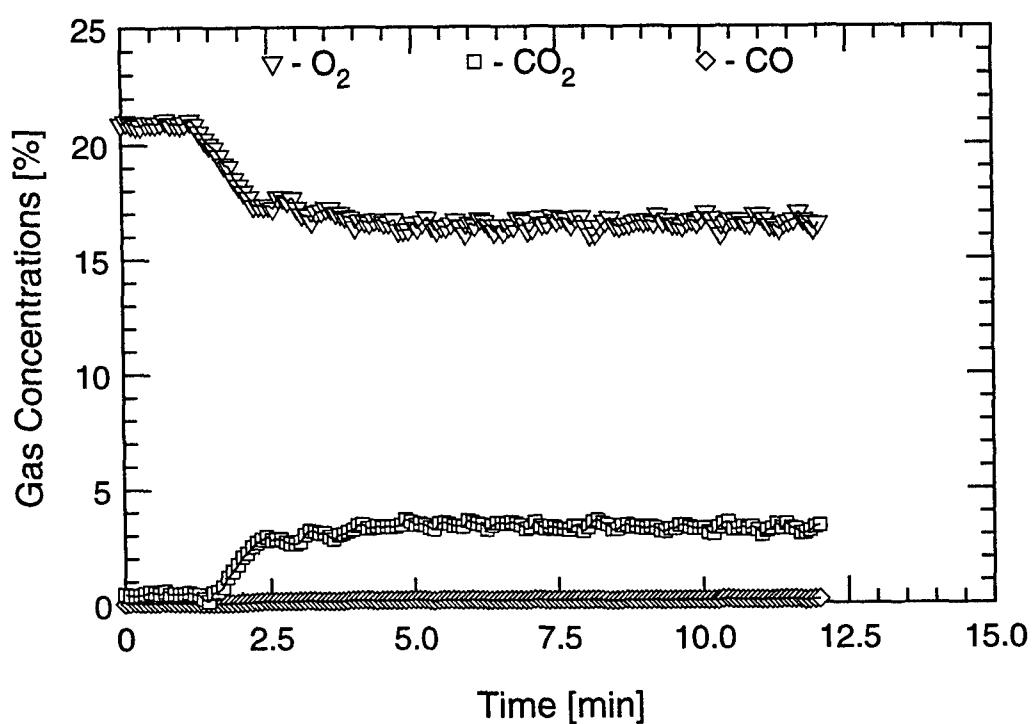
Forward Tree

TEST #62

B-370

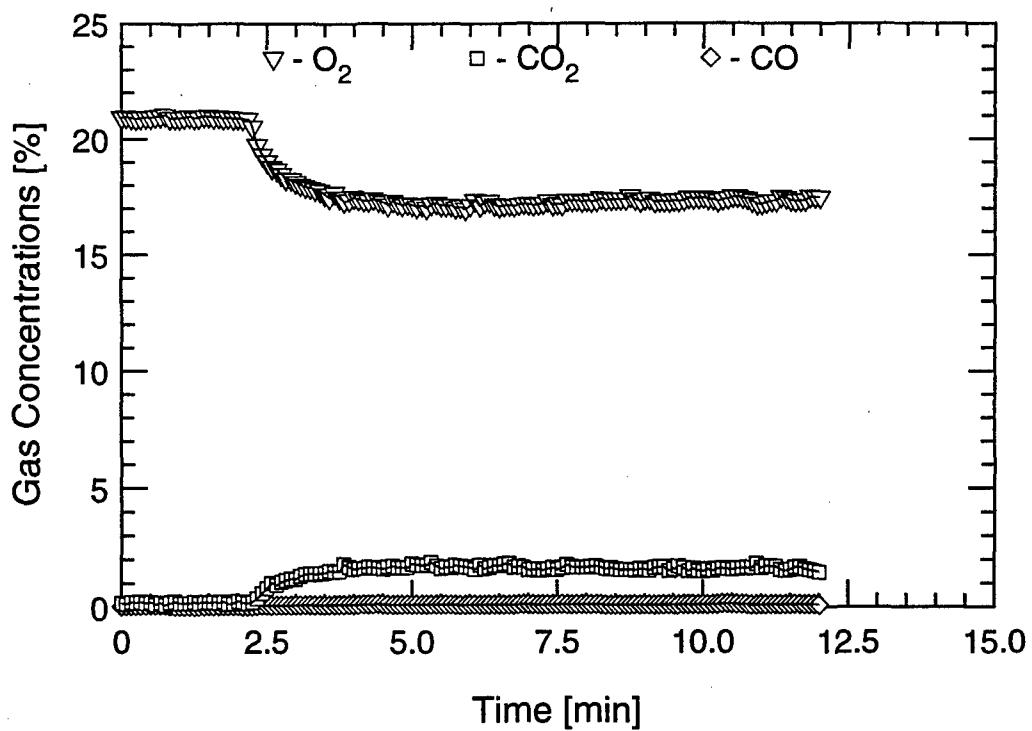


Aft Tree (Low)

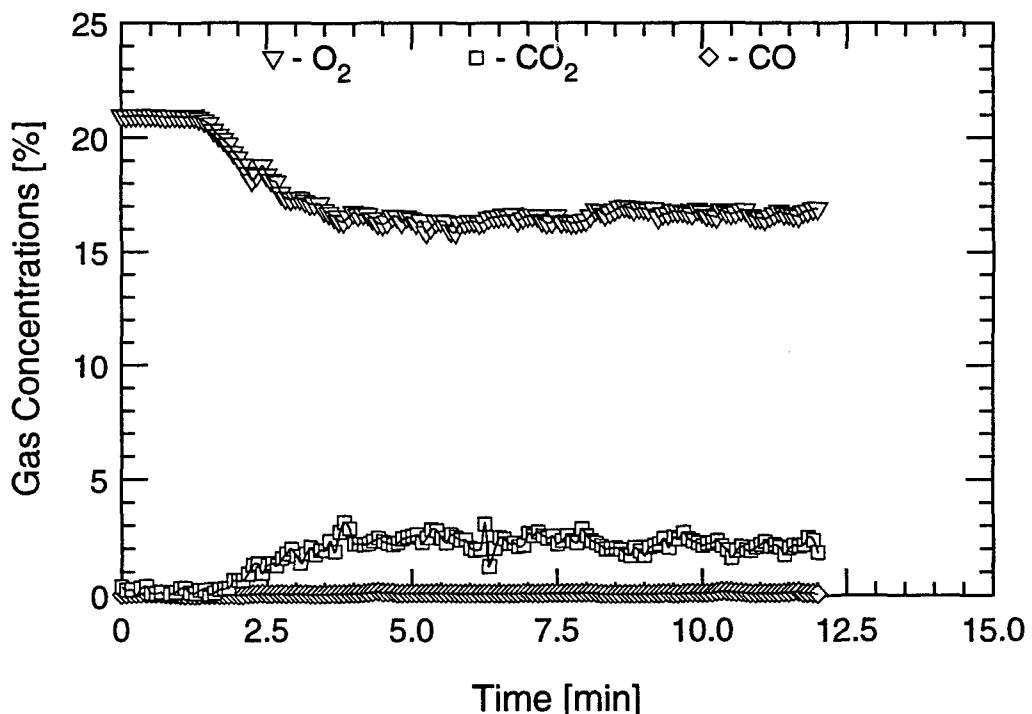


Aft Tree (High)

TEST #62



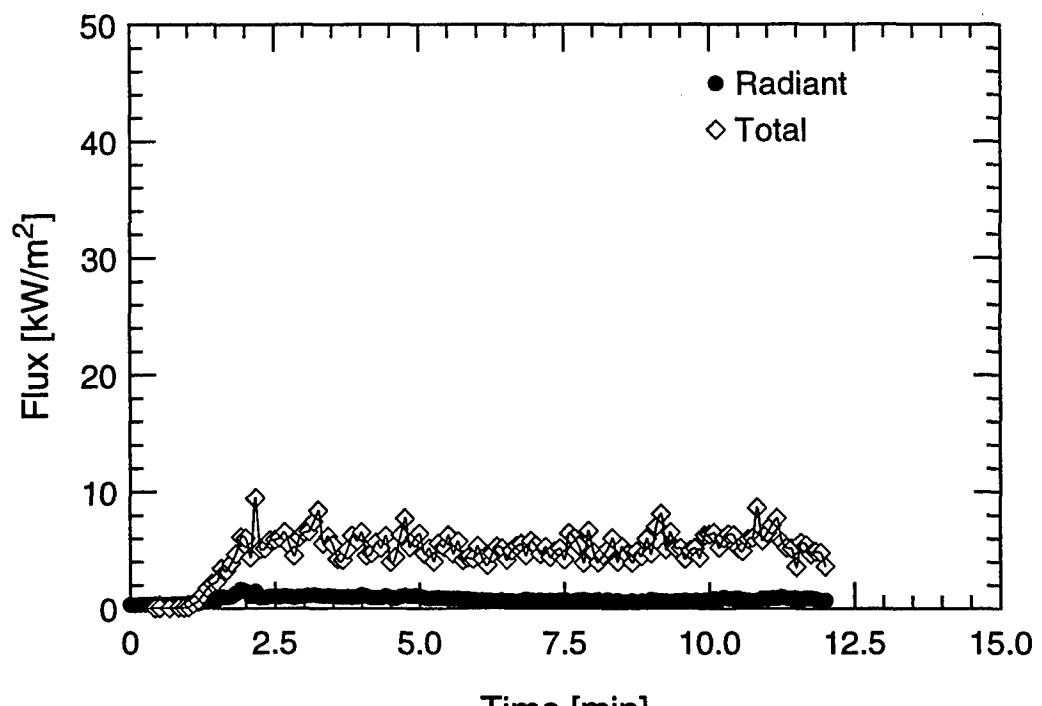
Forward Tree (Low)



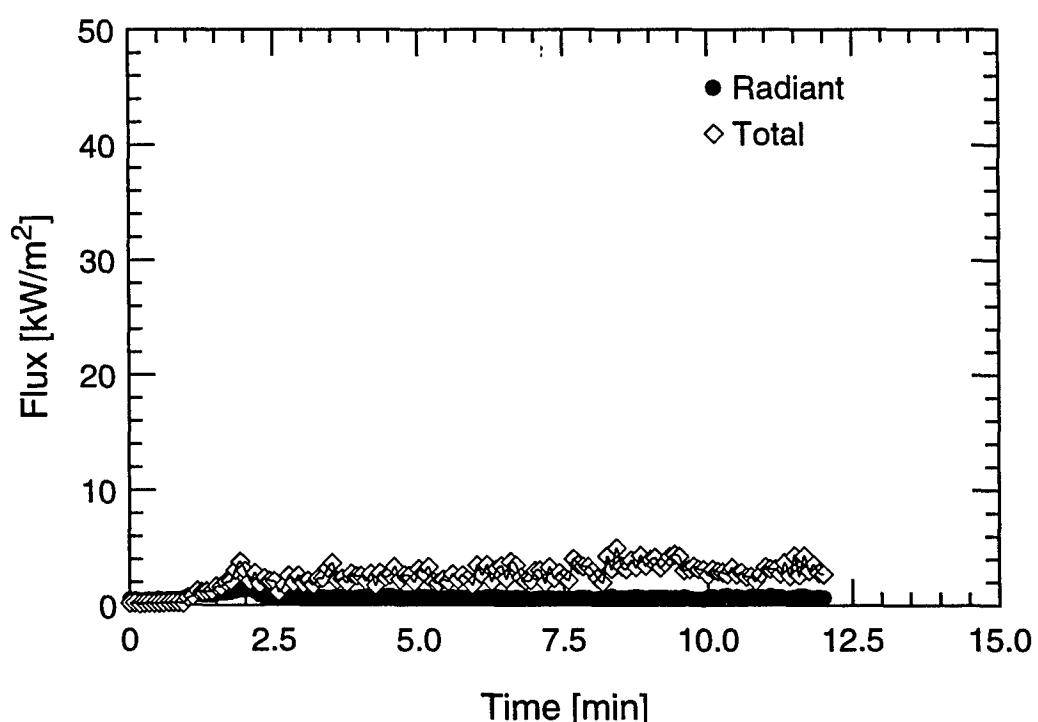
Forward Tree (High)

TEST #62

B-372



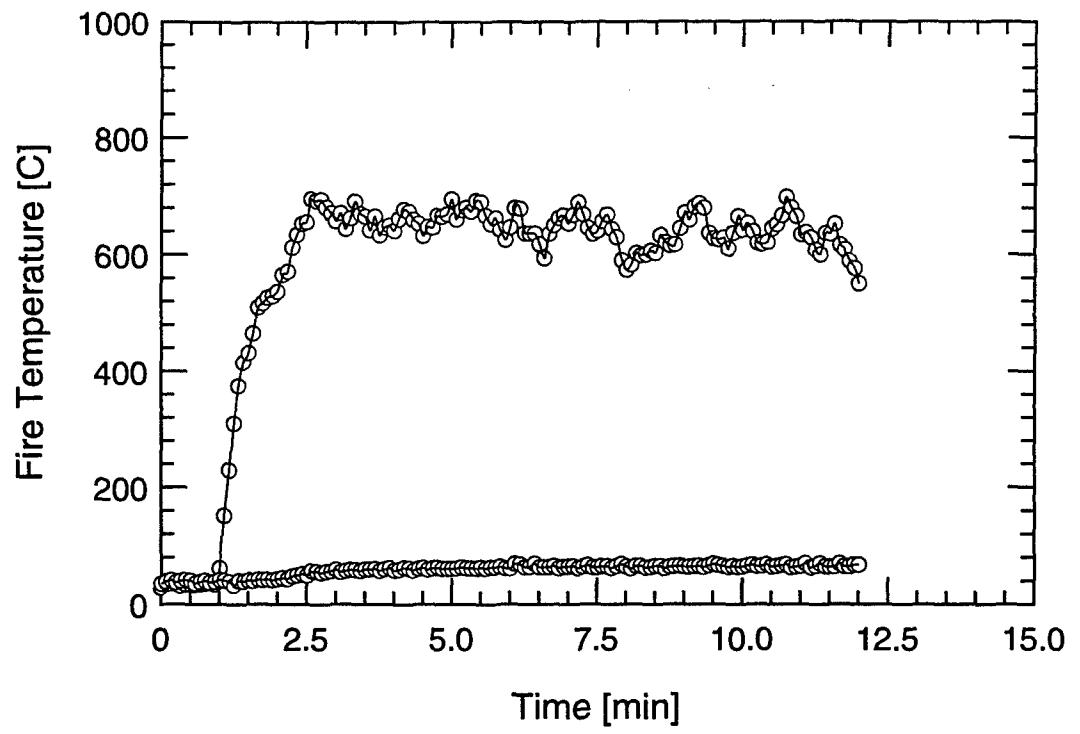
Overhead



Forward Bulkhead

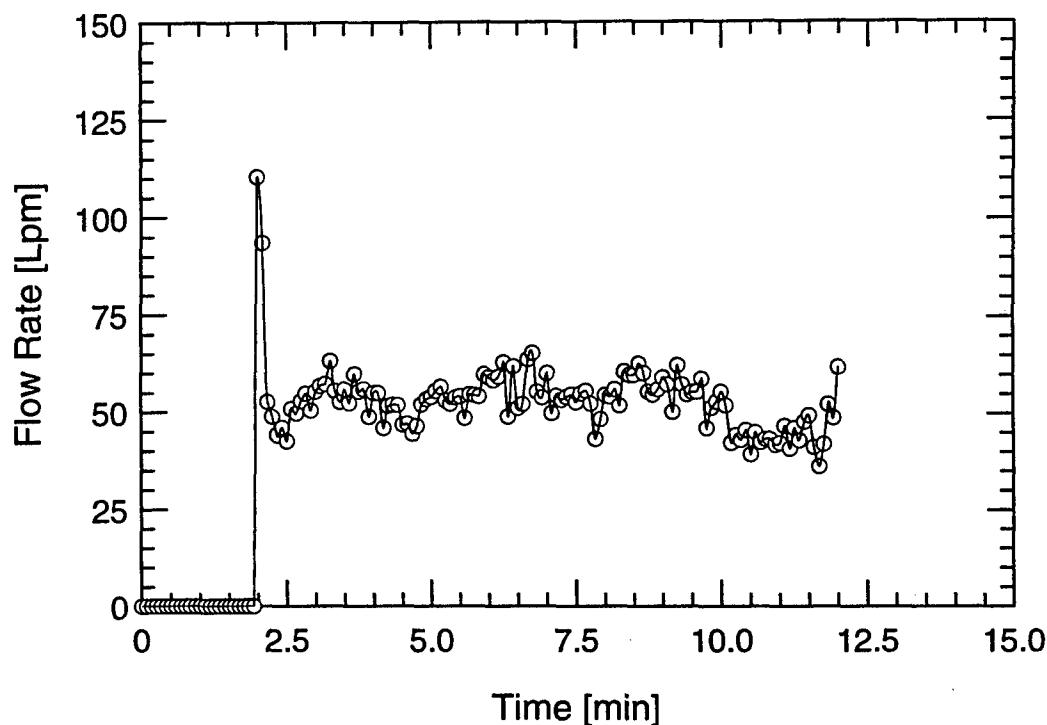
TEST #62

B-373

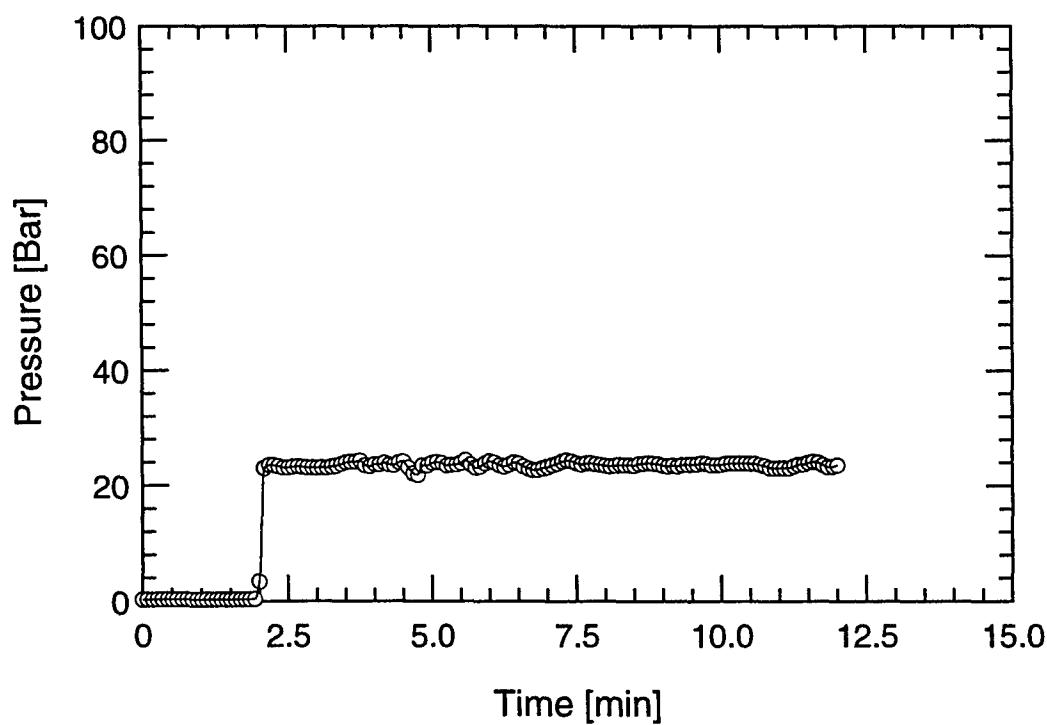


TEST #62

B-374



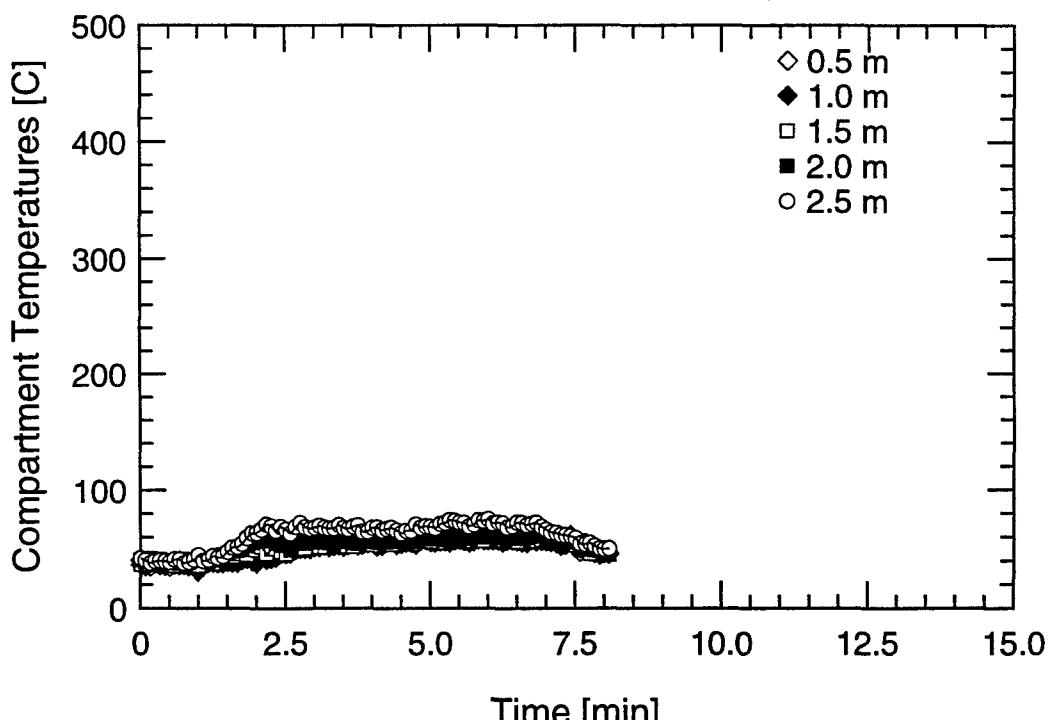
Water Mist System Flow Rate



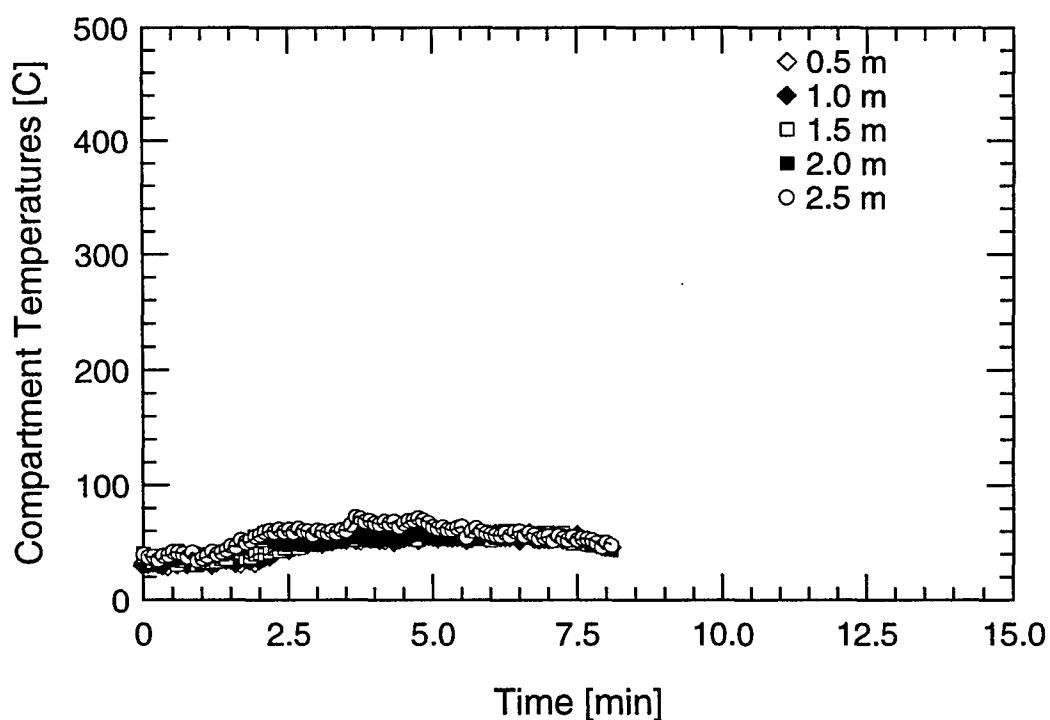
Water Mist System Pressure

TEST #62

B-375



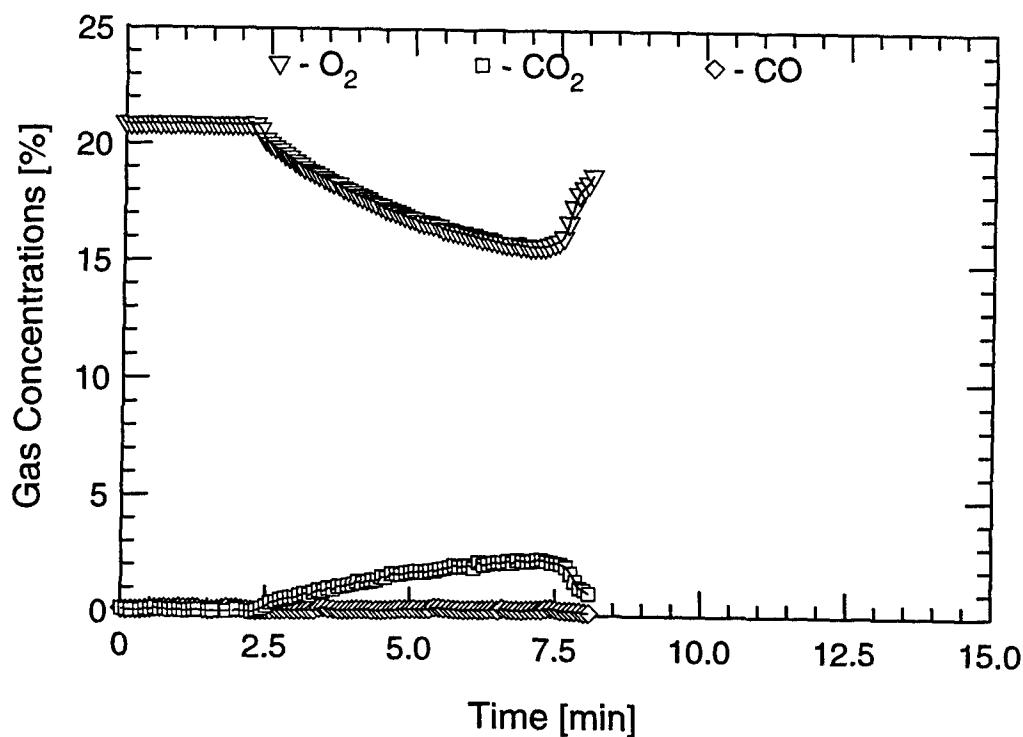
Aft Tree



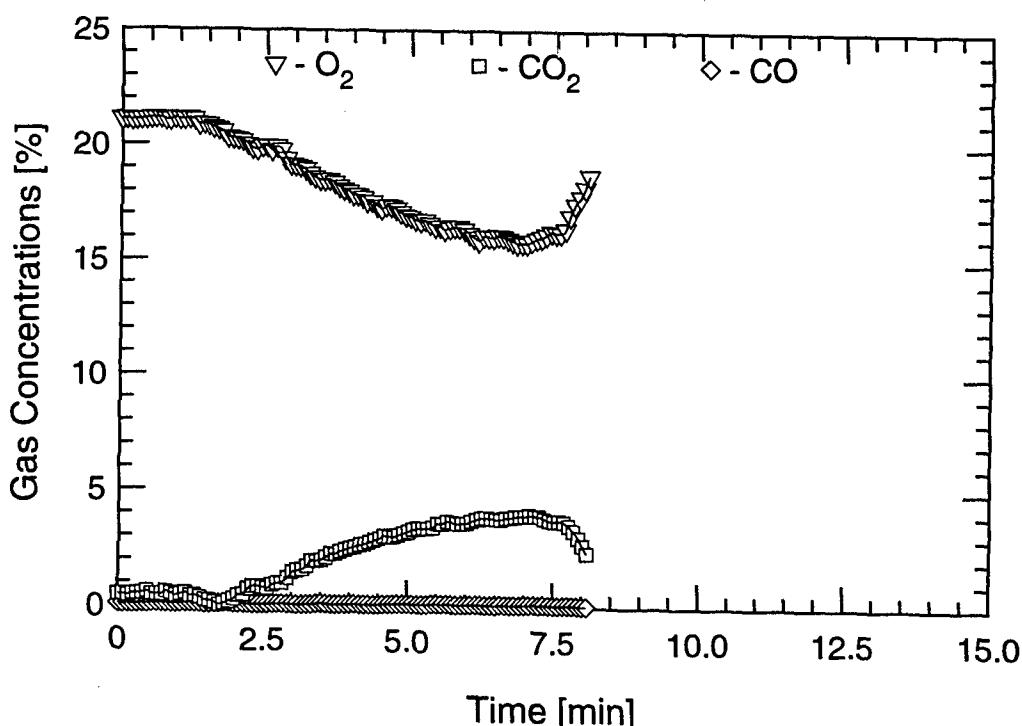
Forward Tree

TEST #63

B-376



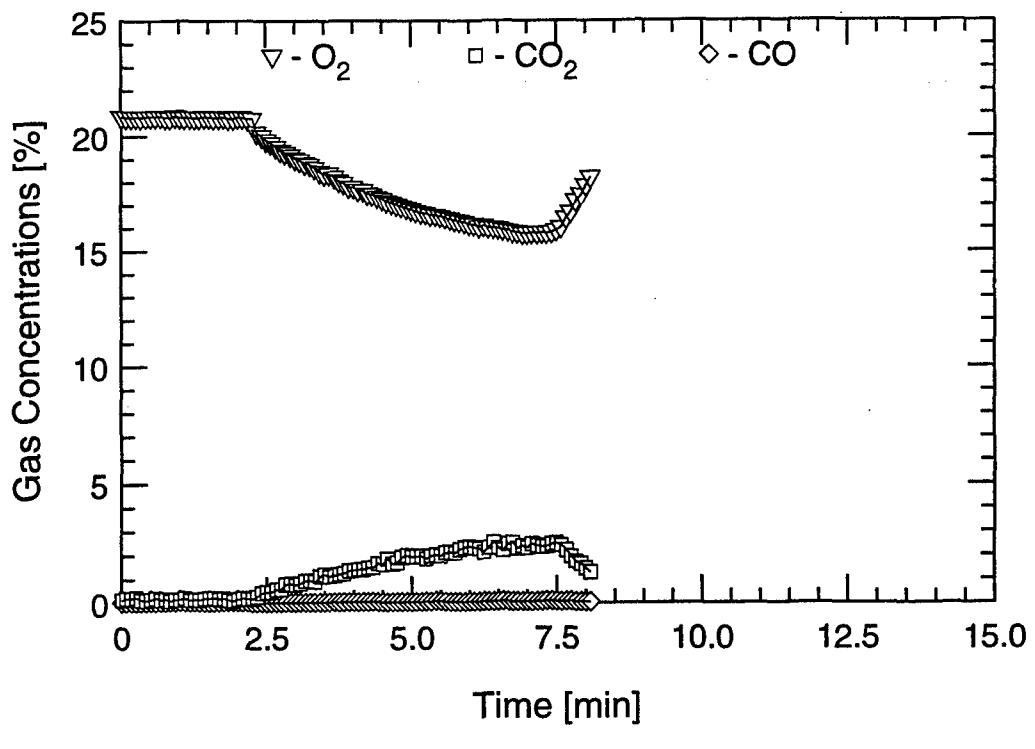
Aft Tree (Low)



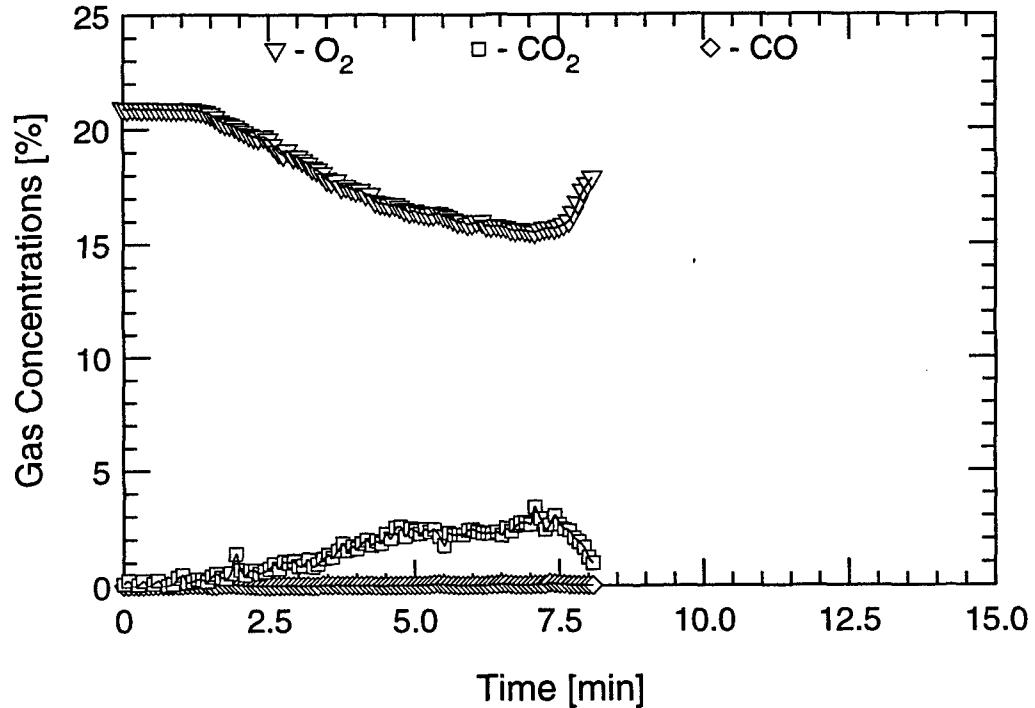
Aft Tree (High)

TEST #63

B-377



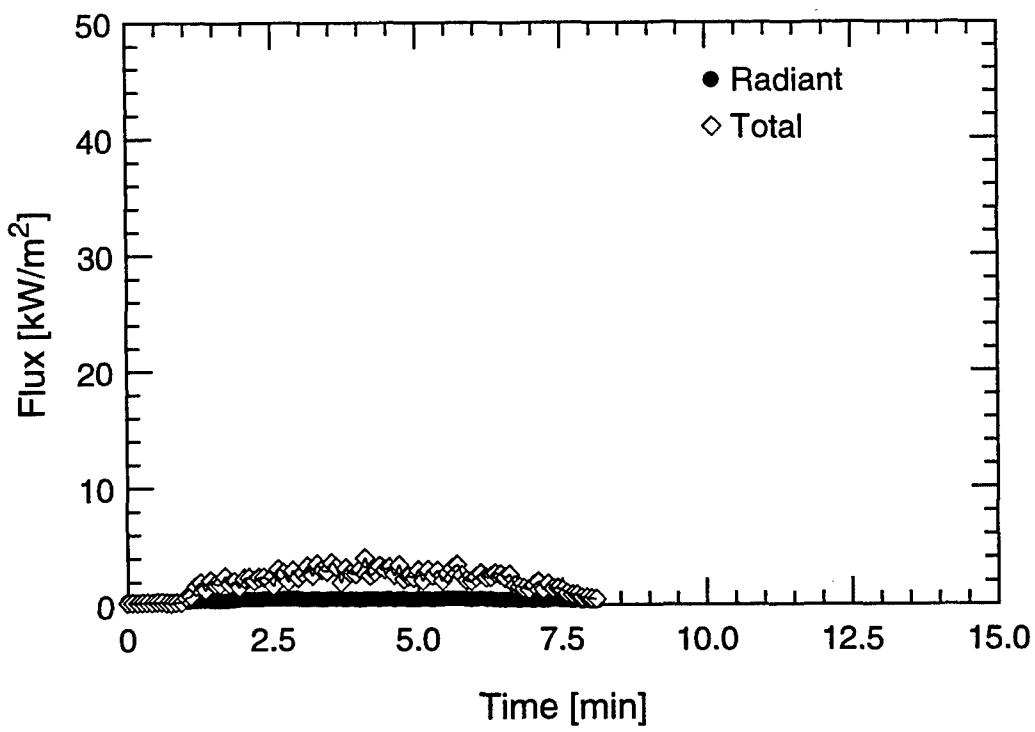
Forward Tree (Low)



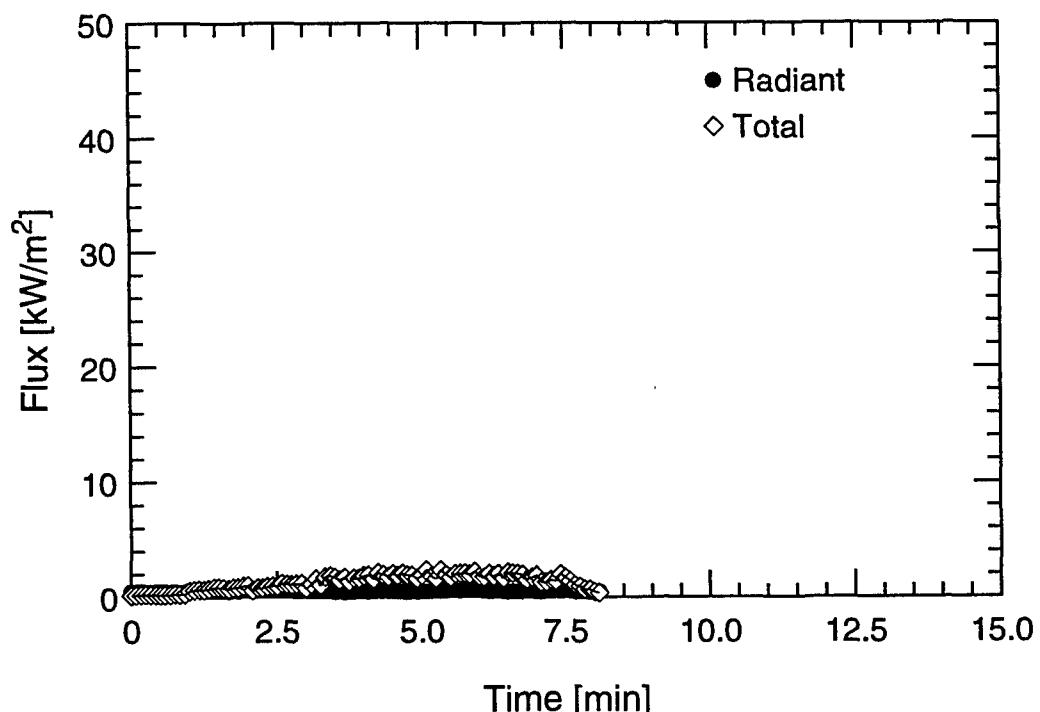
Forward Tree (High)

TEST #63

B-378



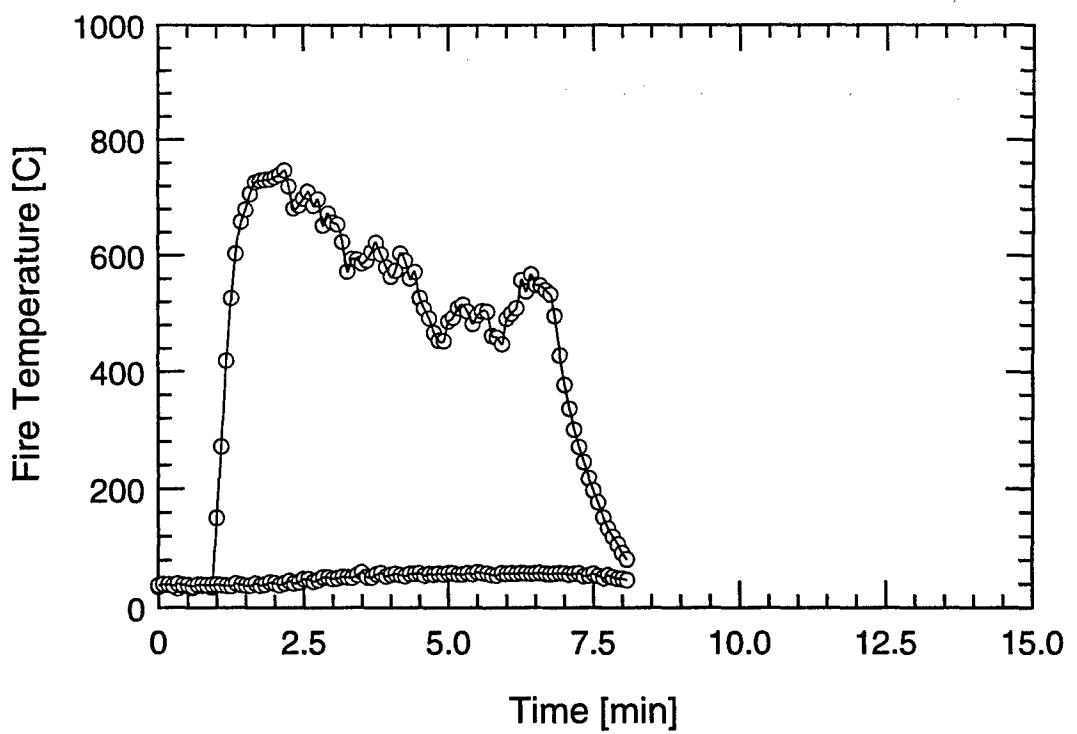
Overhead



Forward Bulkhead

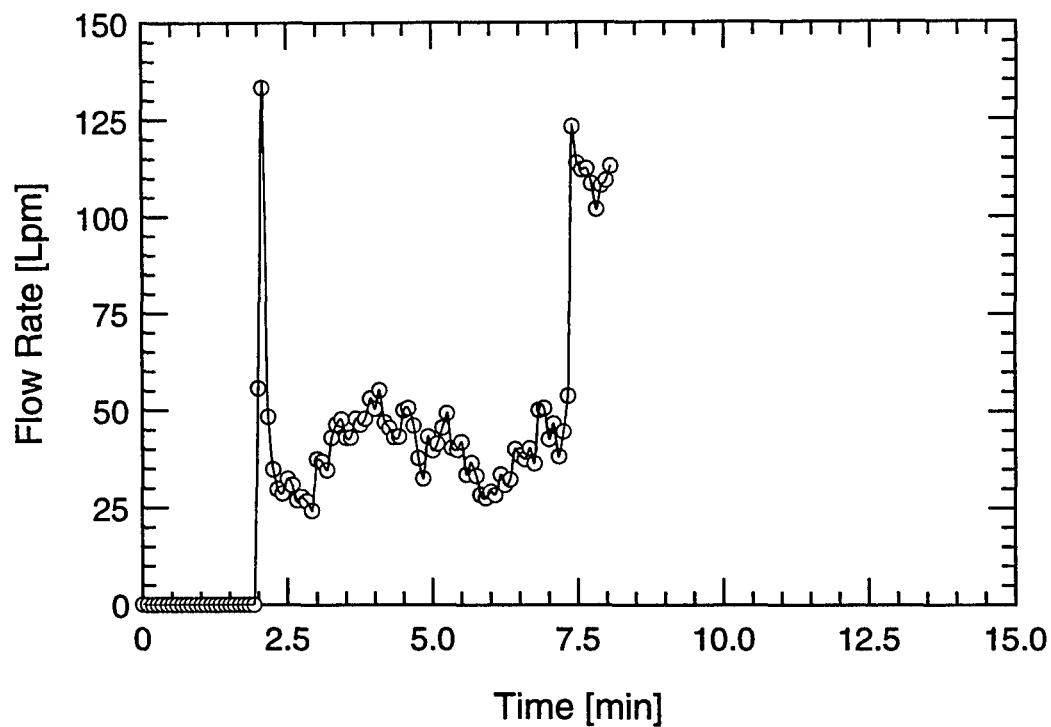
TEST #63

B-379

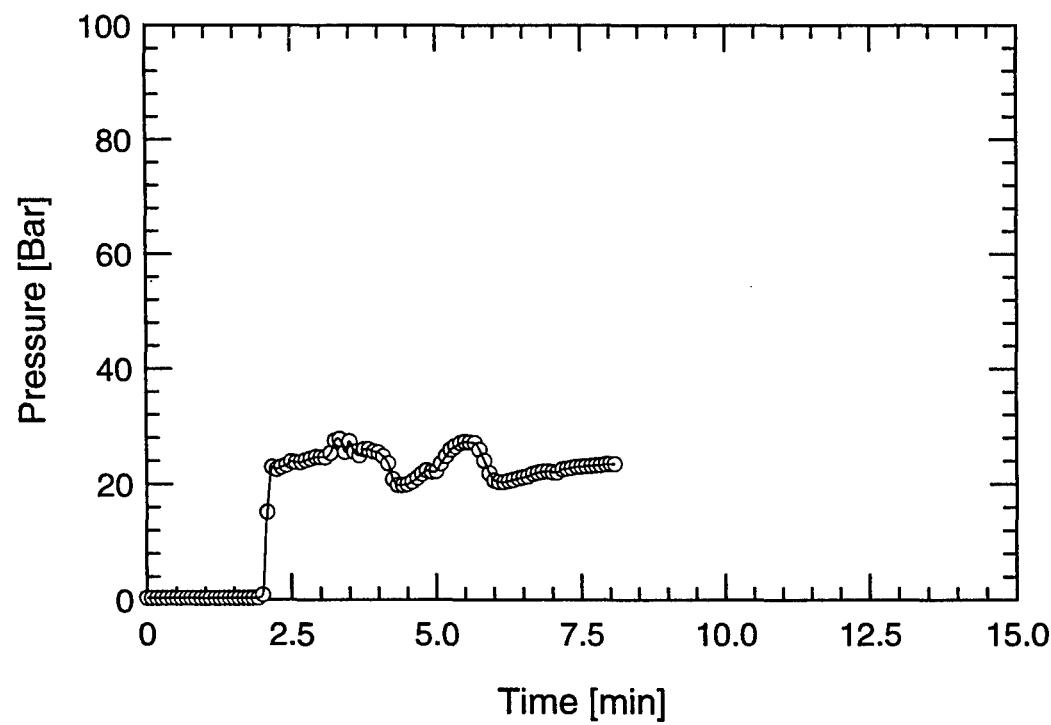


TEST #63

B-380



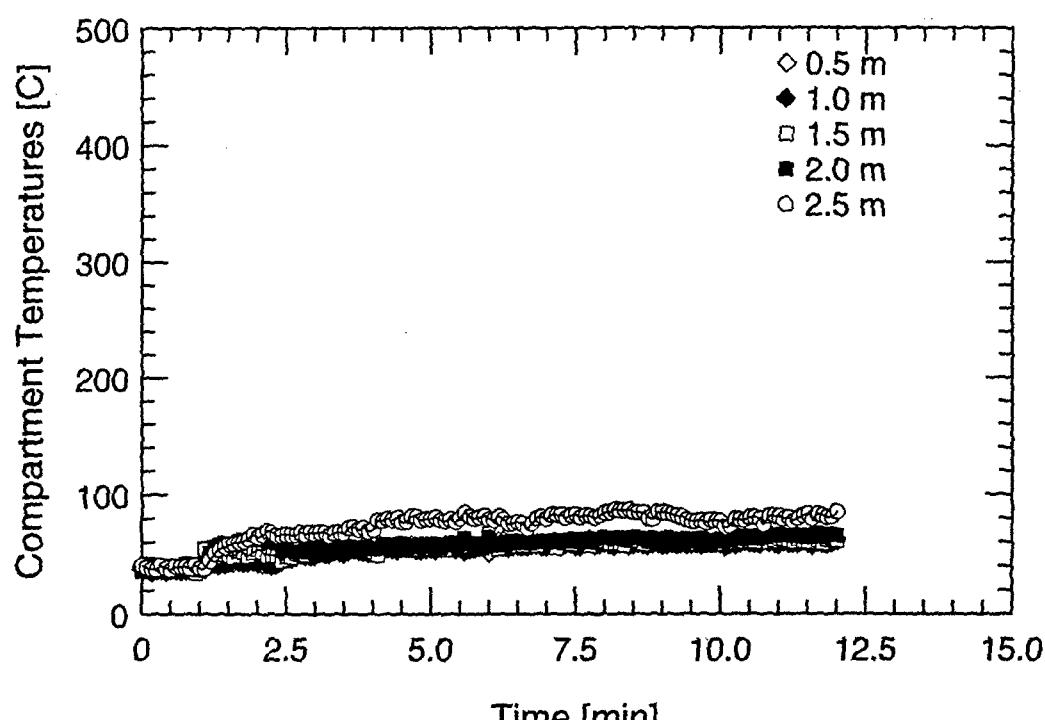
Water Mist System Flow Rate



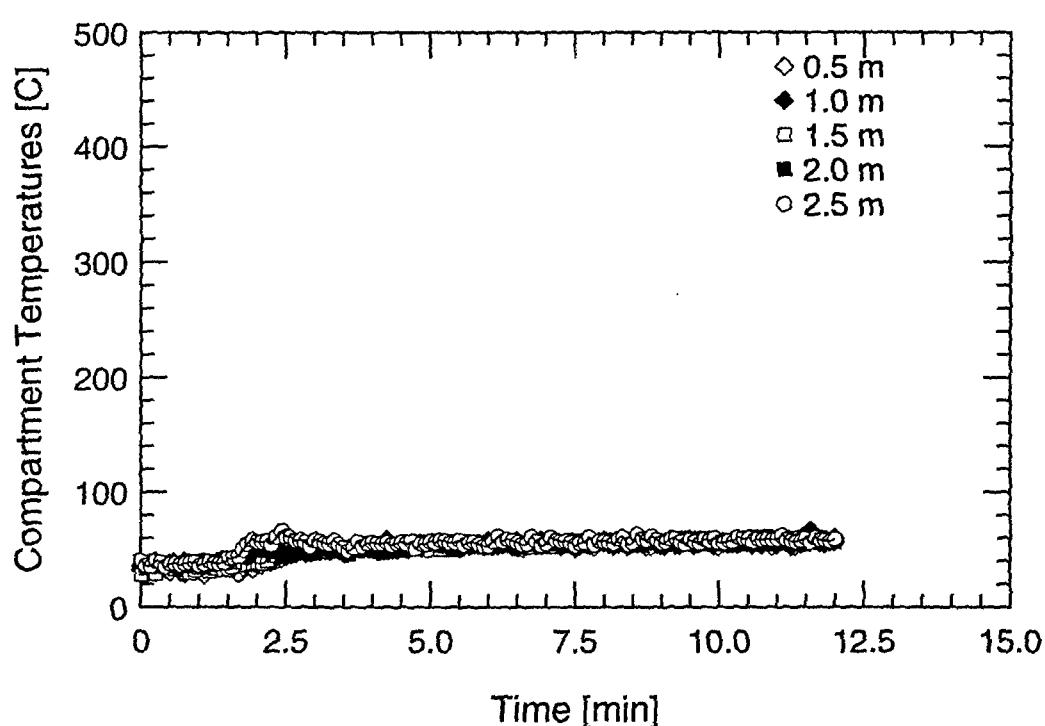
Water Mist System Pressure

TEST #63

B-381



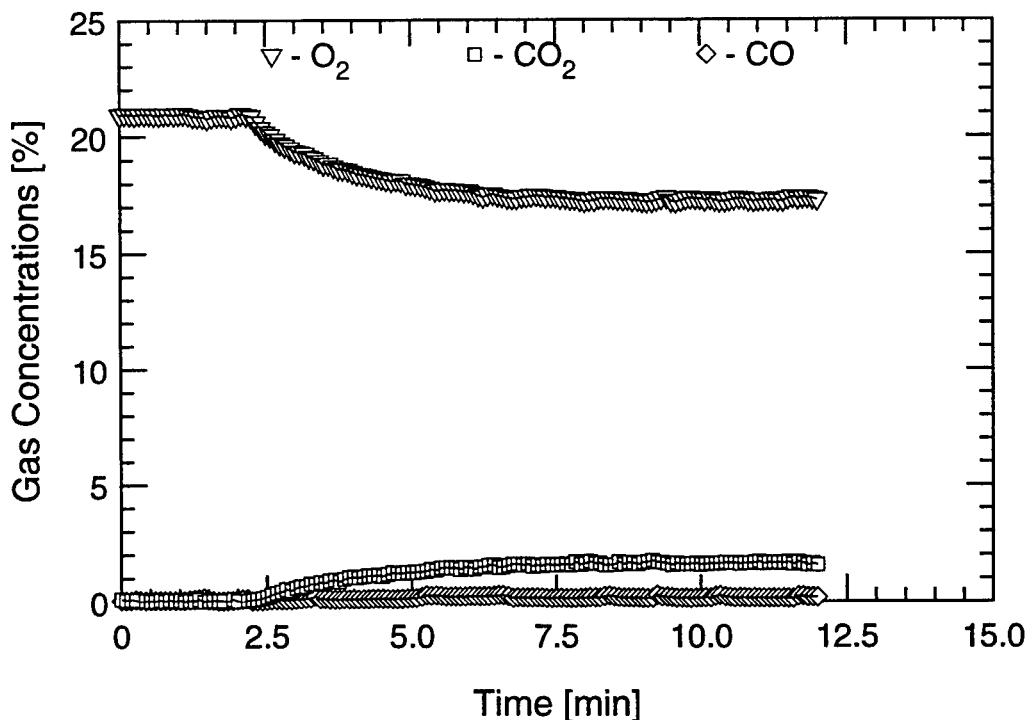
Aft Tree



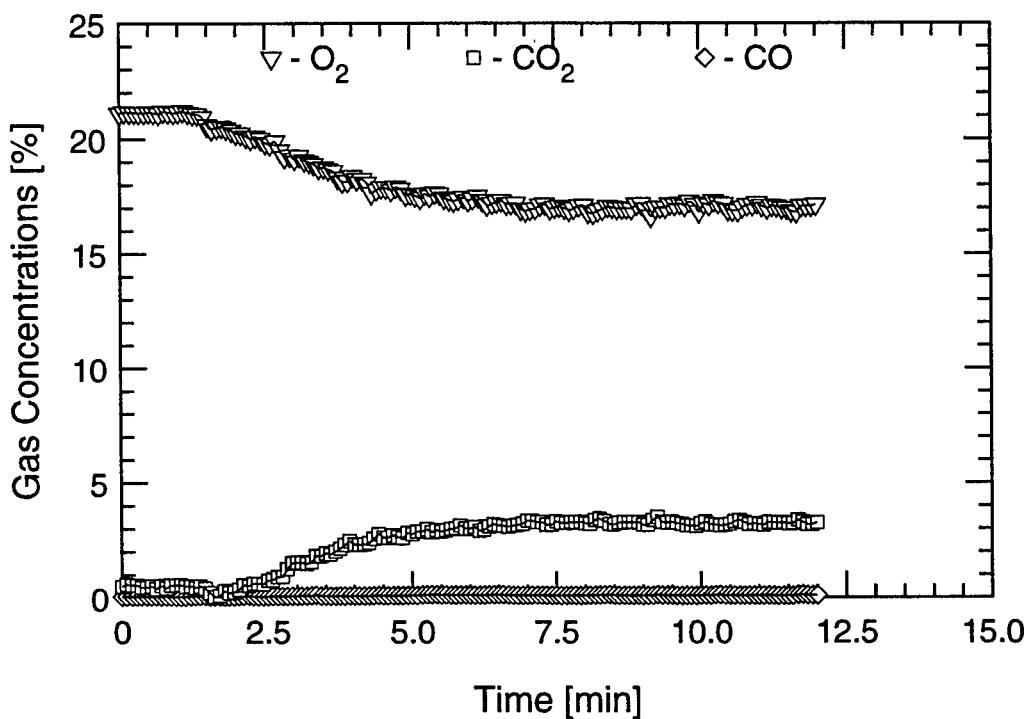
Forward Tree

TEST #64

B-382



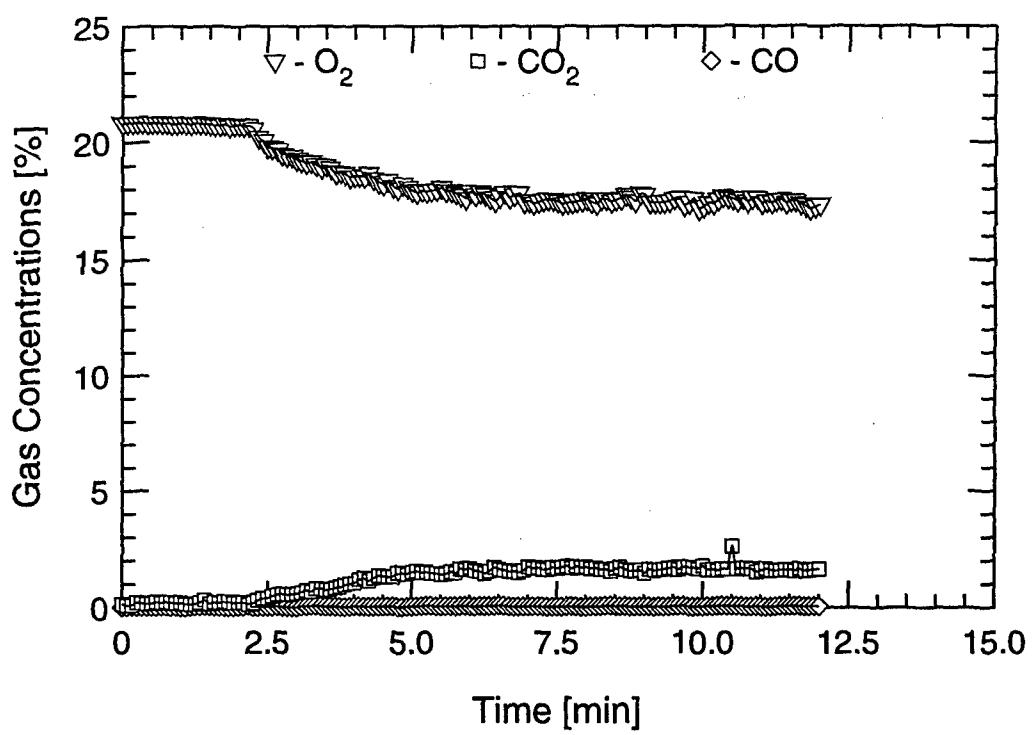
Aft Tree (Low)



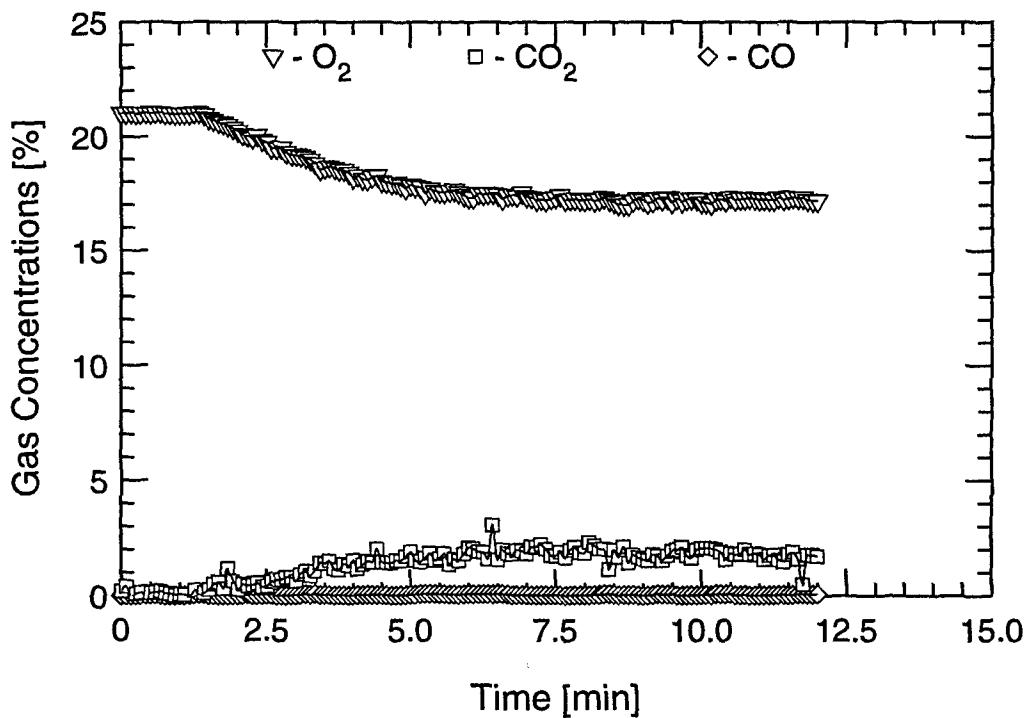
Aft Tree (High)

TEST #64

B-383



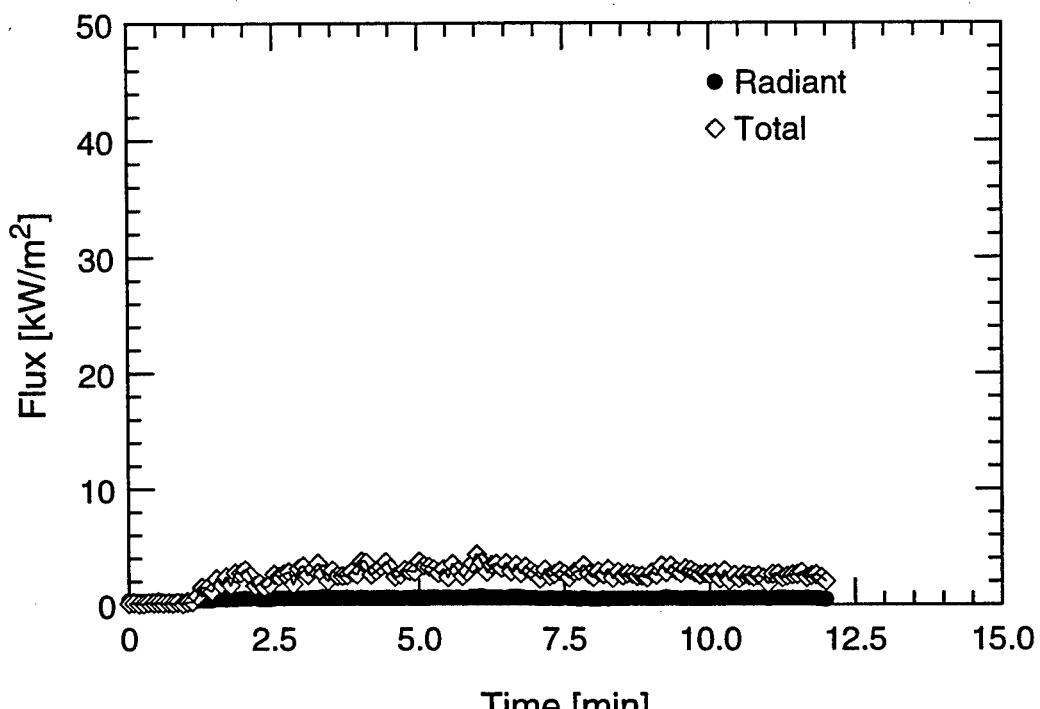
Forward Tree (Low)



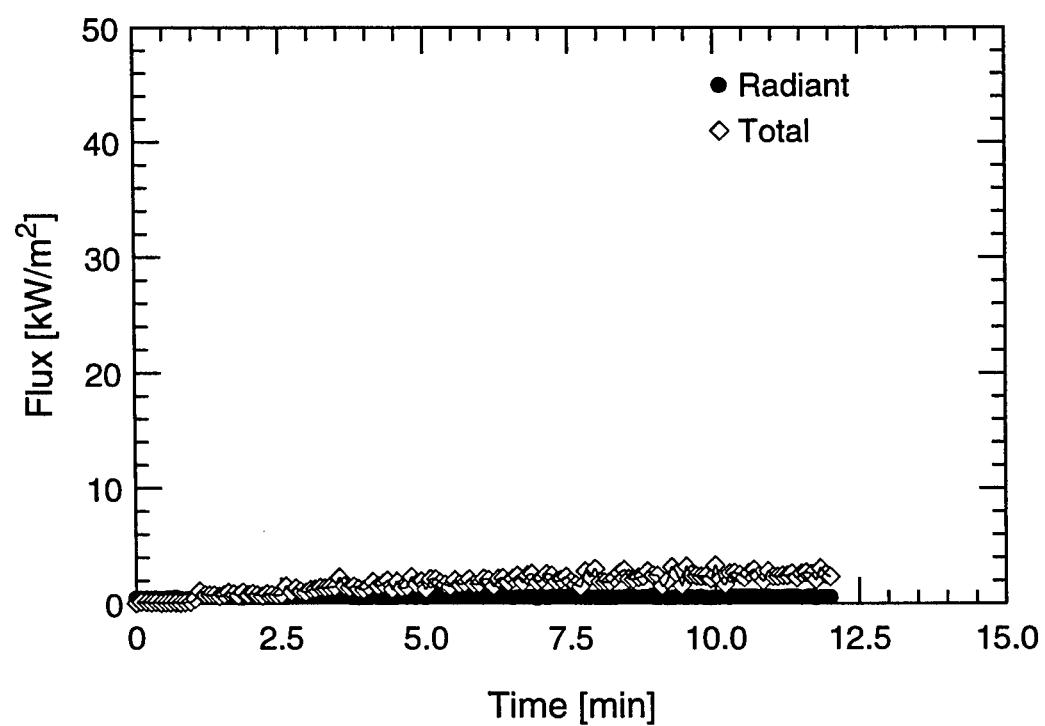
Forward Tree (High)

TEST #64

B-384

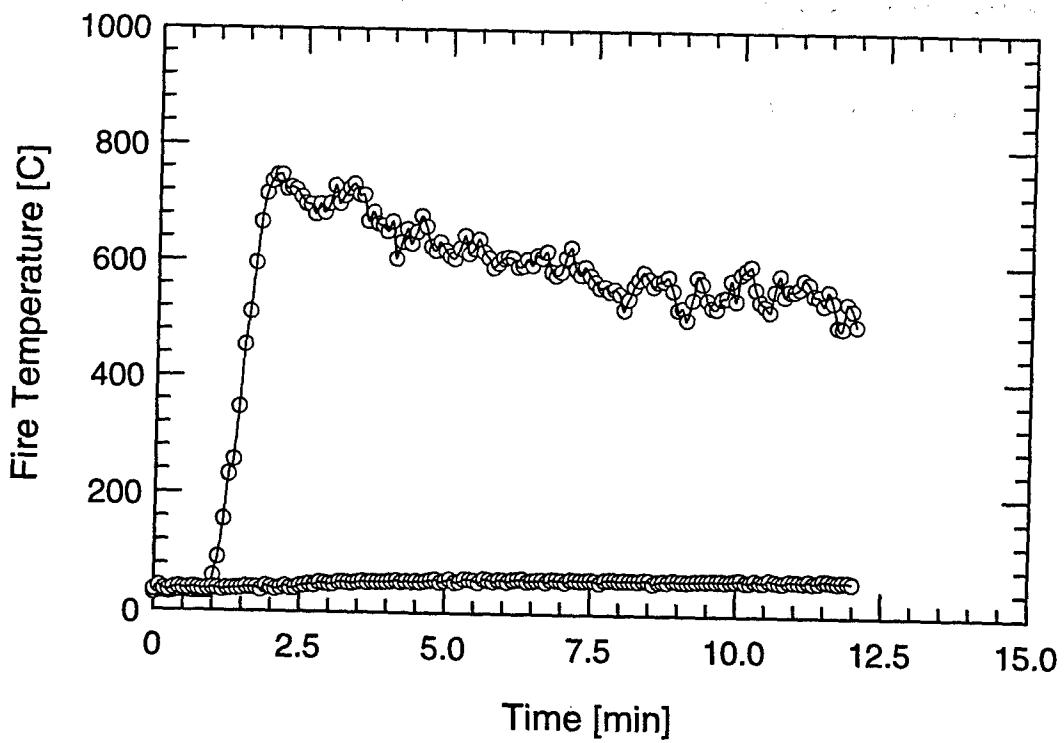


Overhead



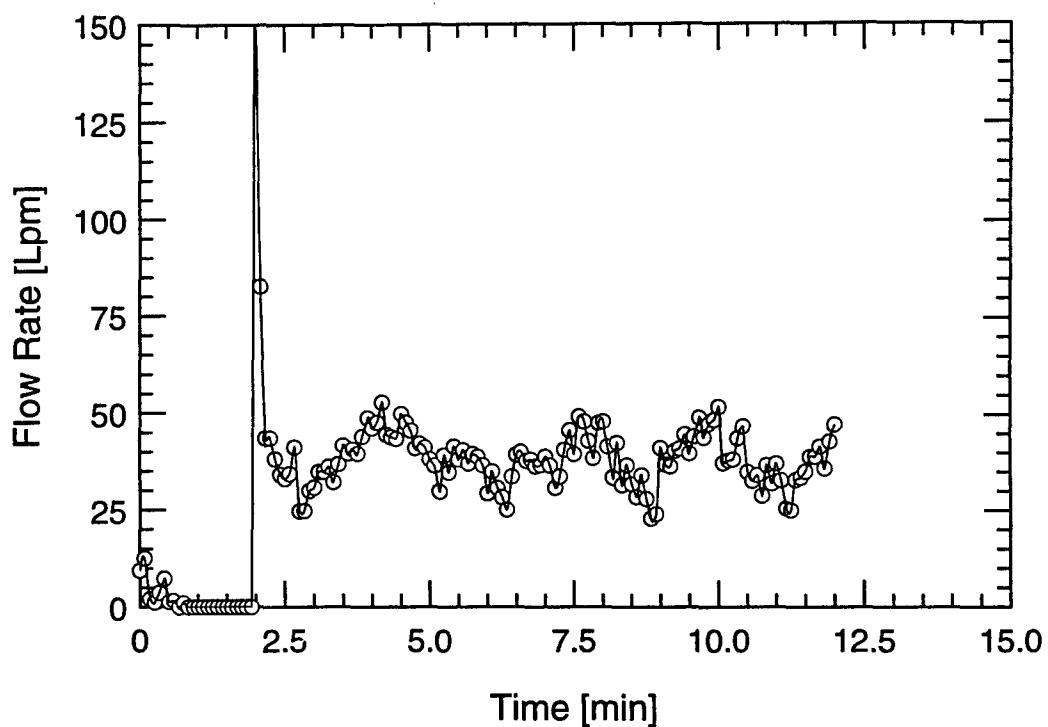
Forward Bulkhead

TEST #64

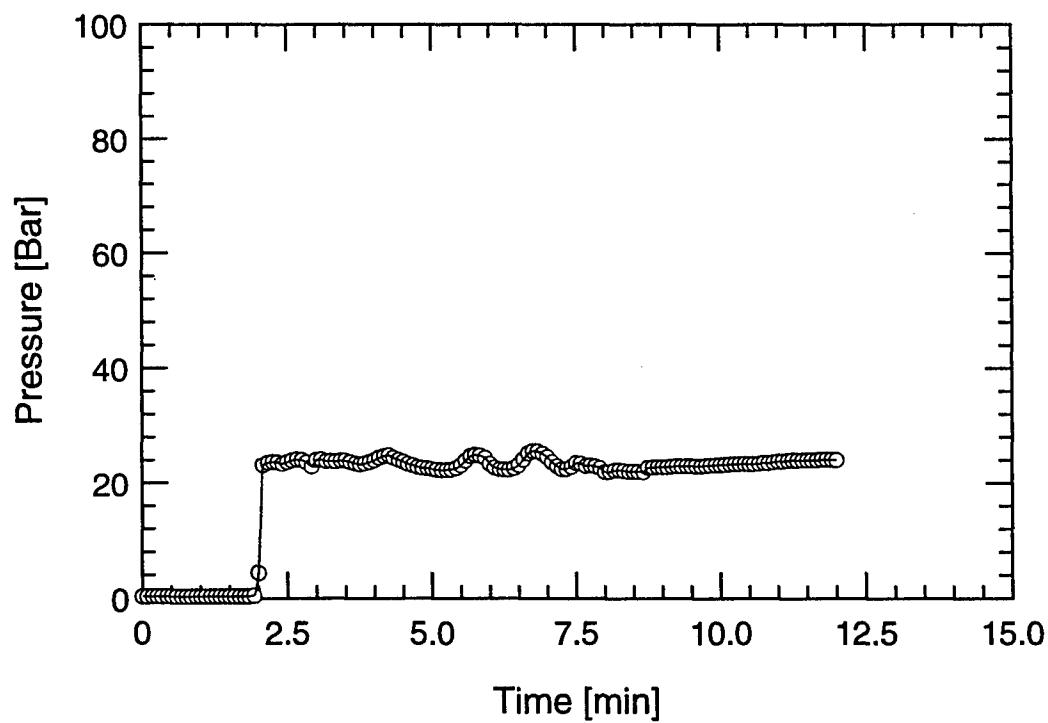


TEST #64

B-386

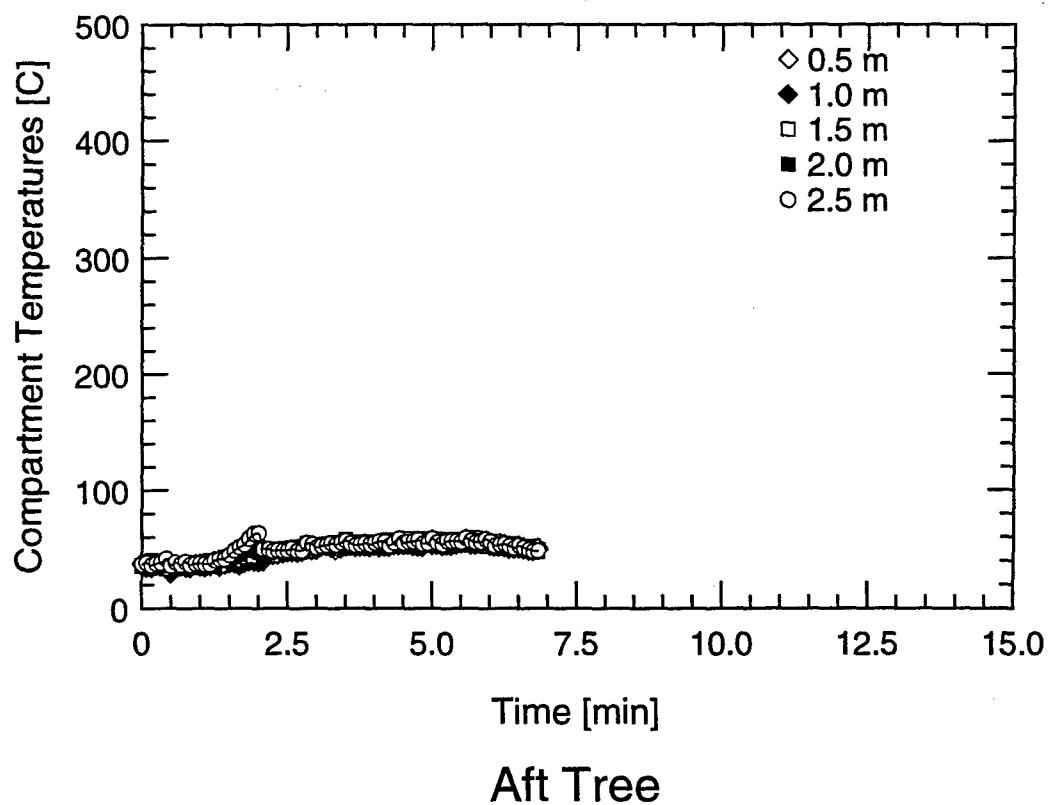


Water Mist System Flow Rate

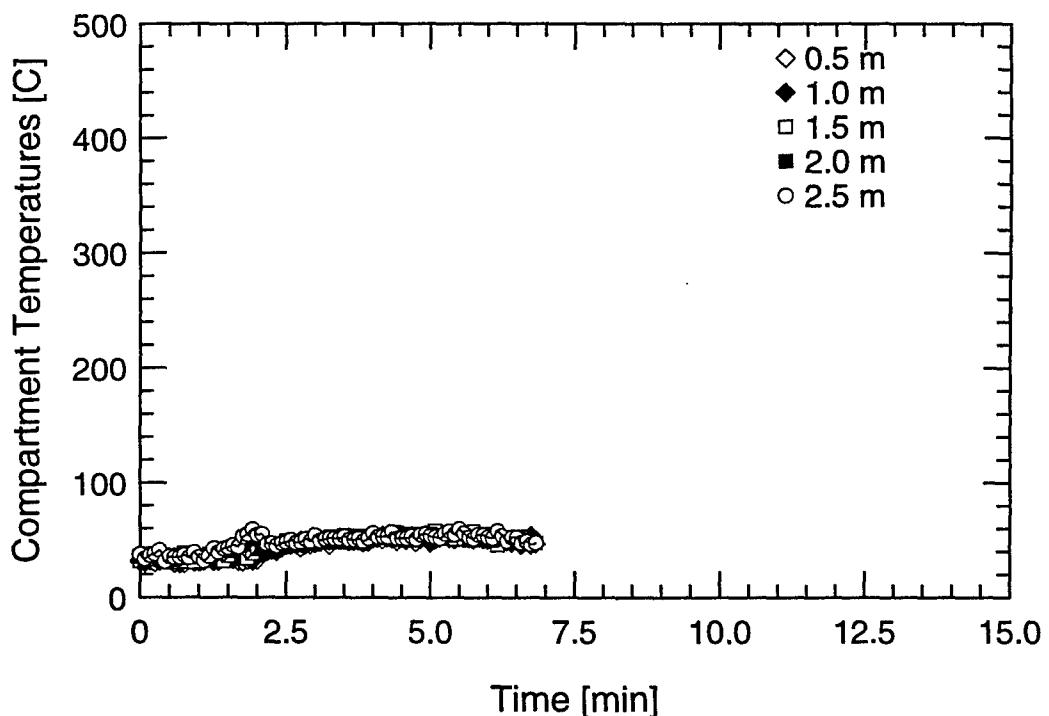


Water Mist System Pressure

TEST #64



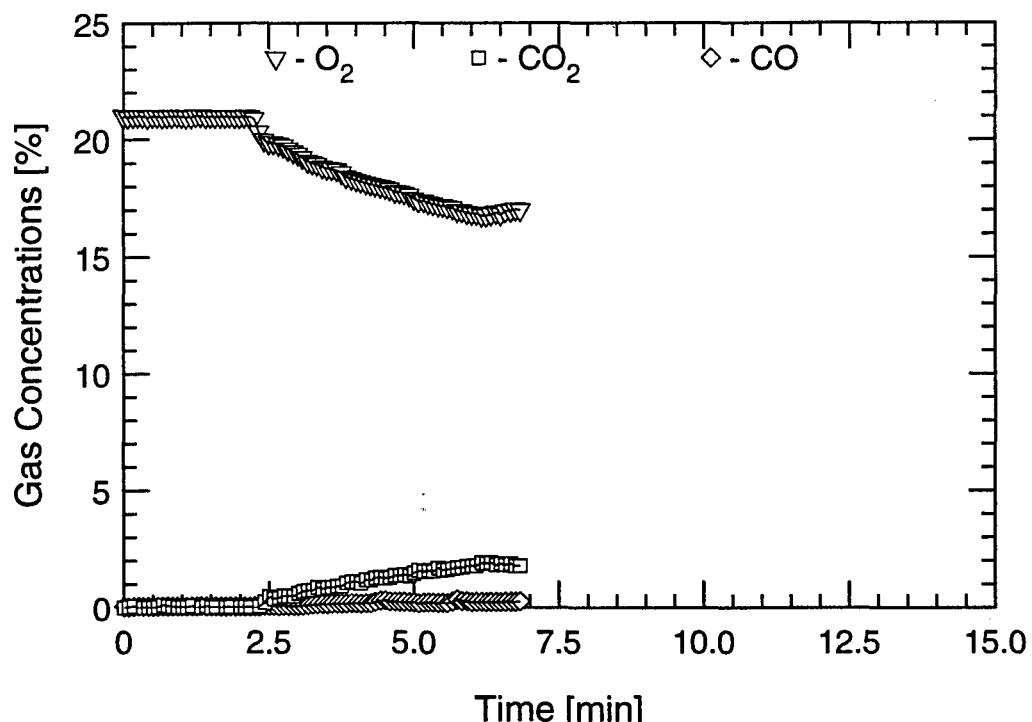
Aft Tree



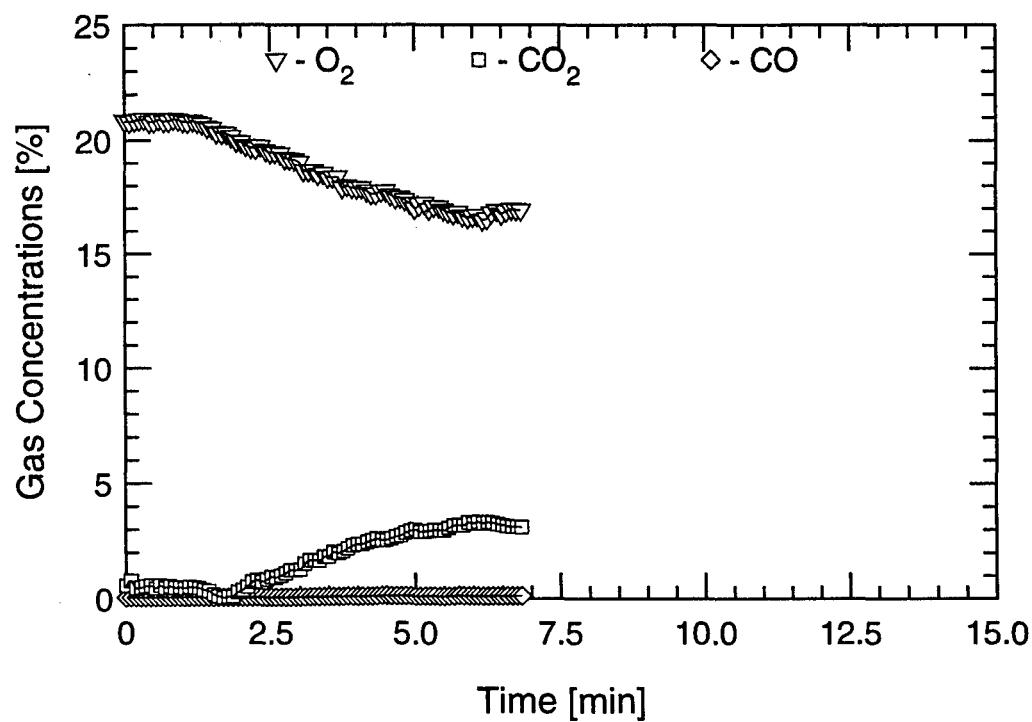
Forward Tree

TEST #65

B-388



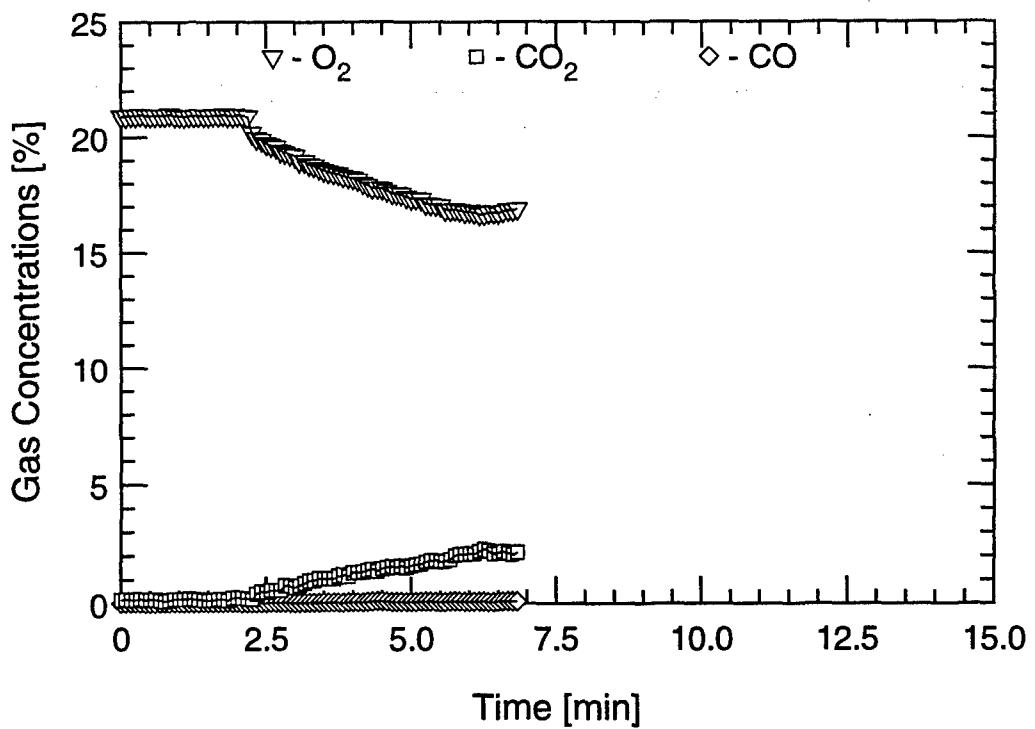
Aft Tree (Low)



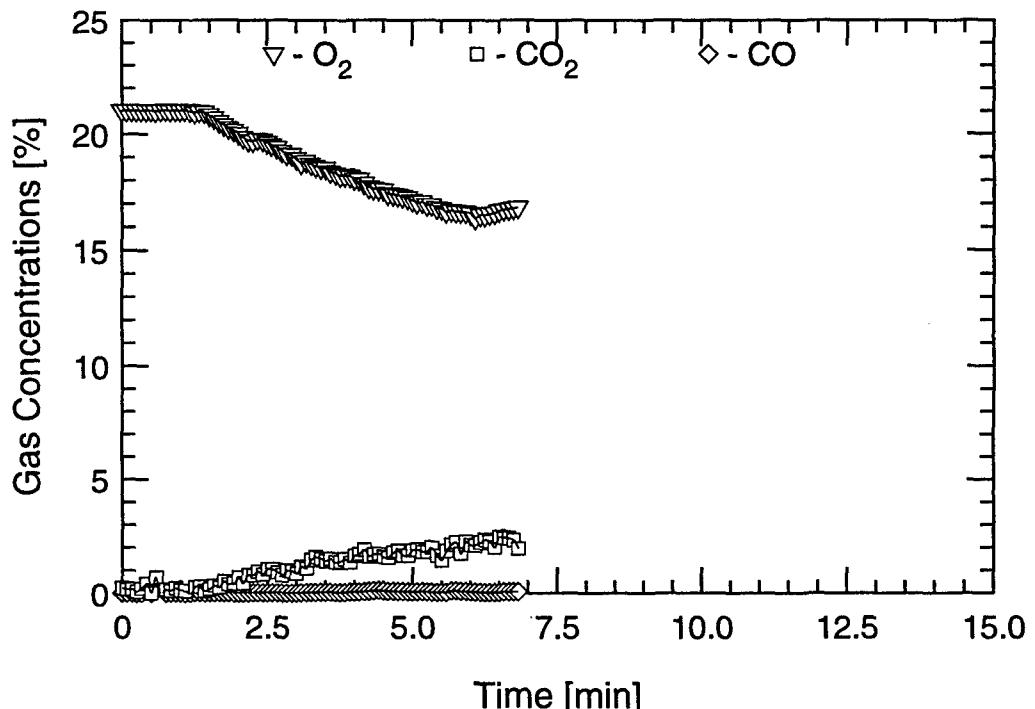
Aft Tree (High)

TEST #65

B-389



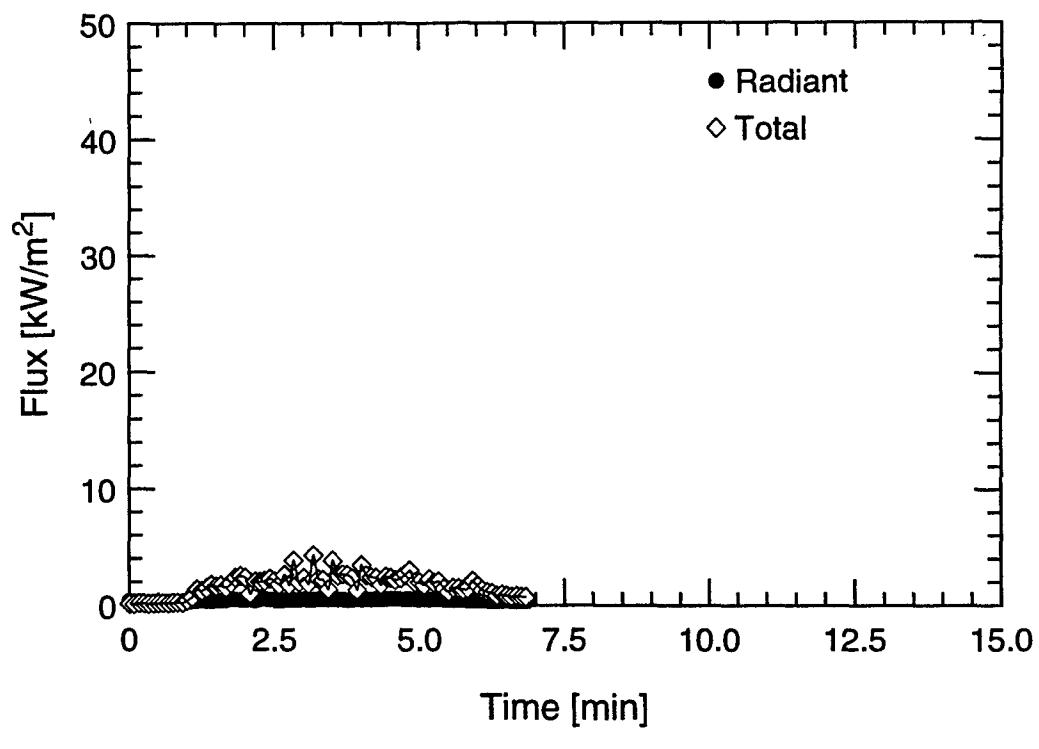
Forward Tree (Low)



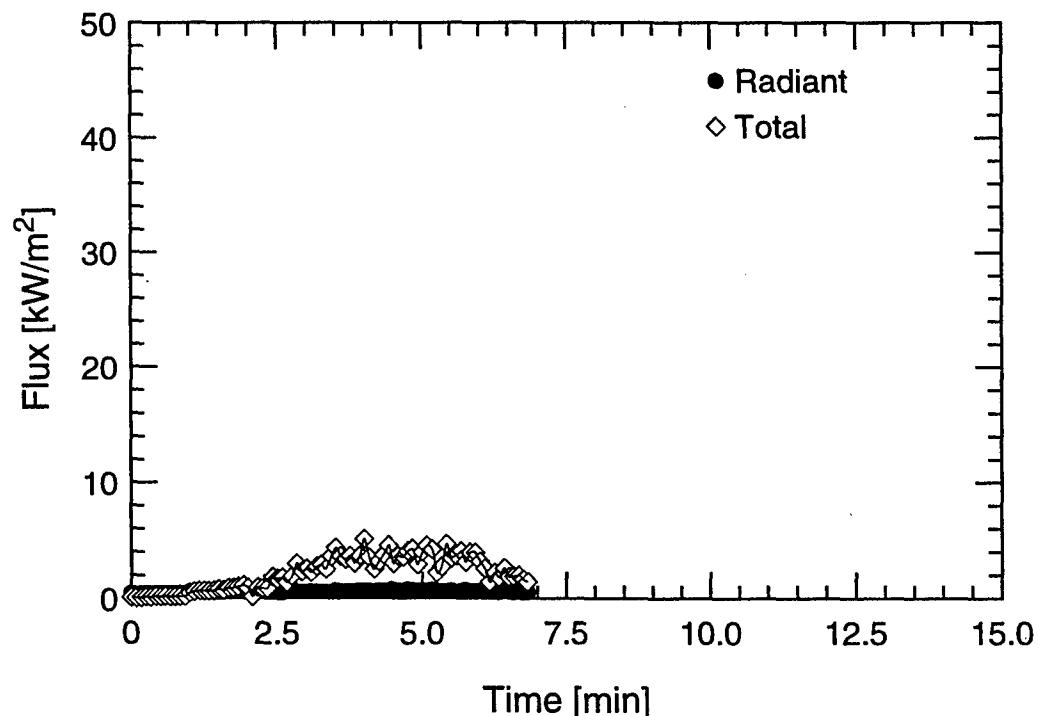
Forward Tree (High)

TEST #65

B-390



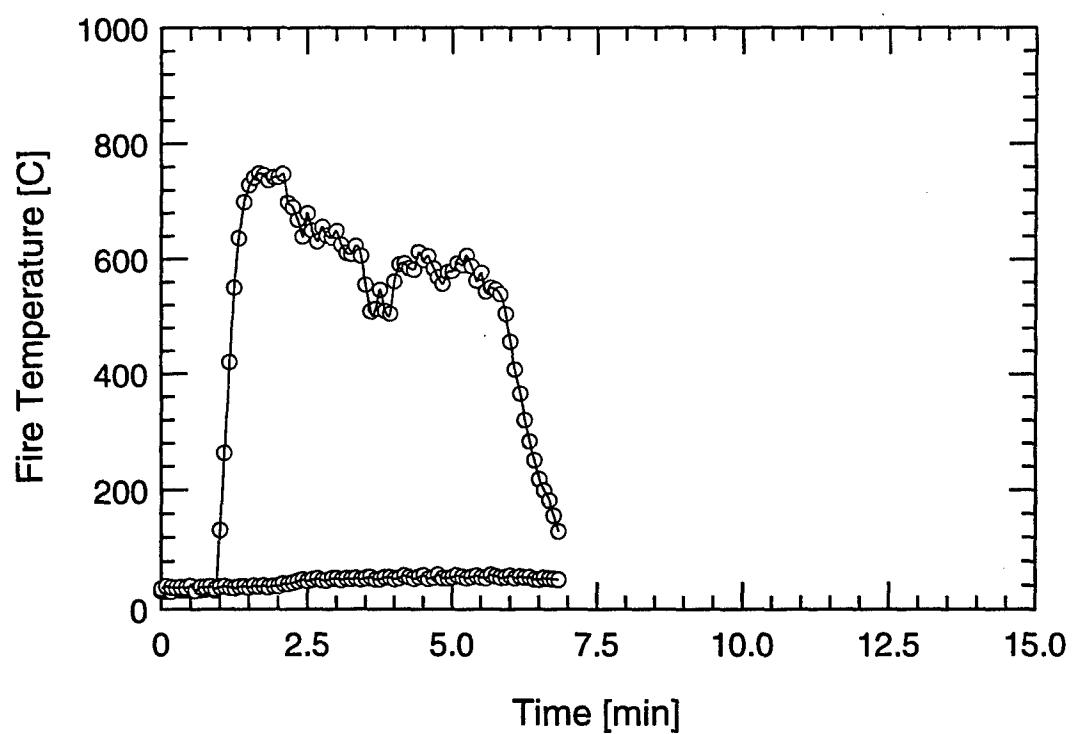
Overhead



Forward Bulkhead

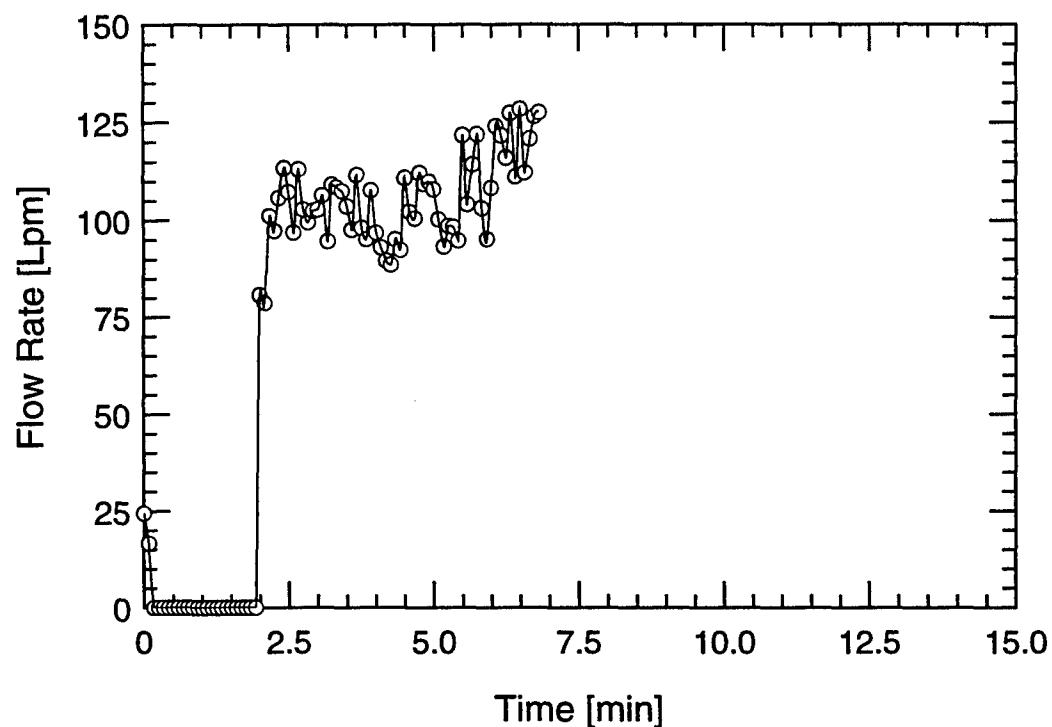
TEST #65

B-391

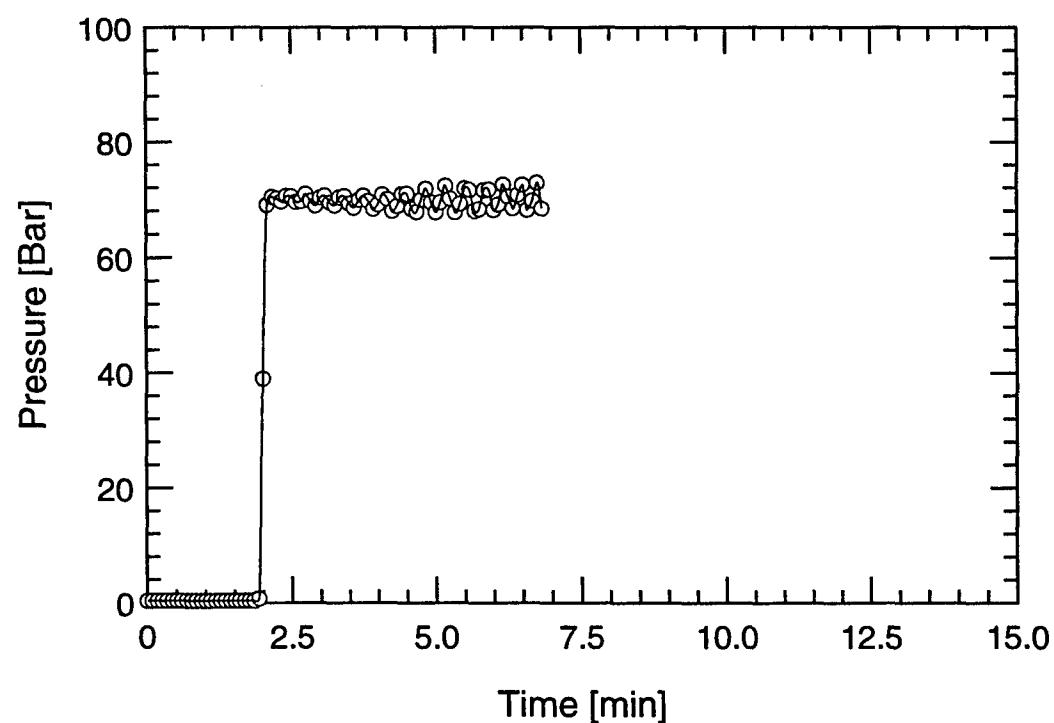


TEST #65

B-392



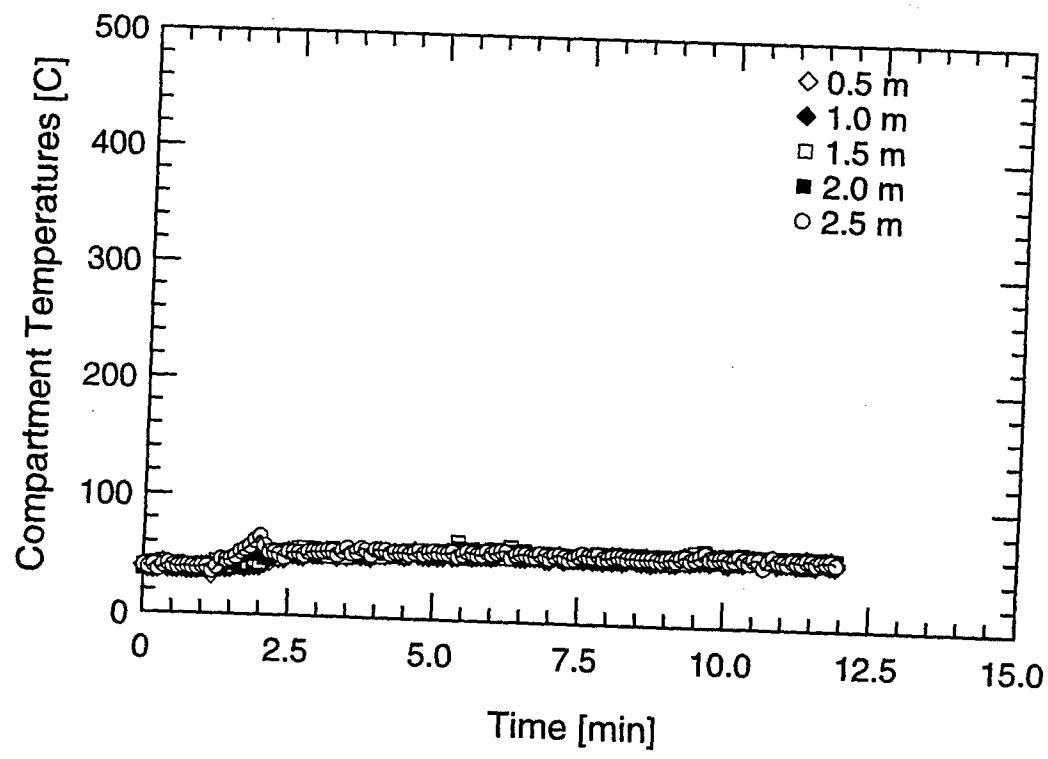
Water Mist System Flow Rate



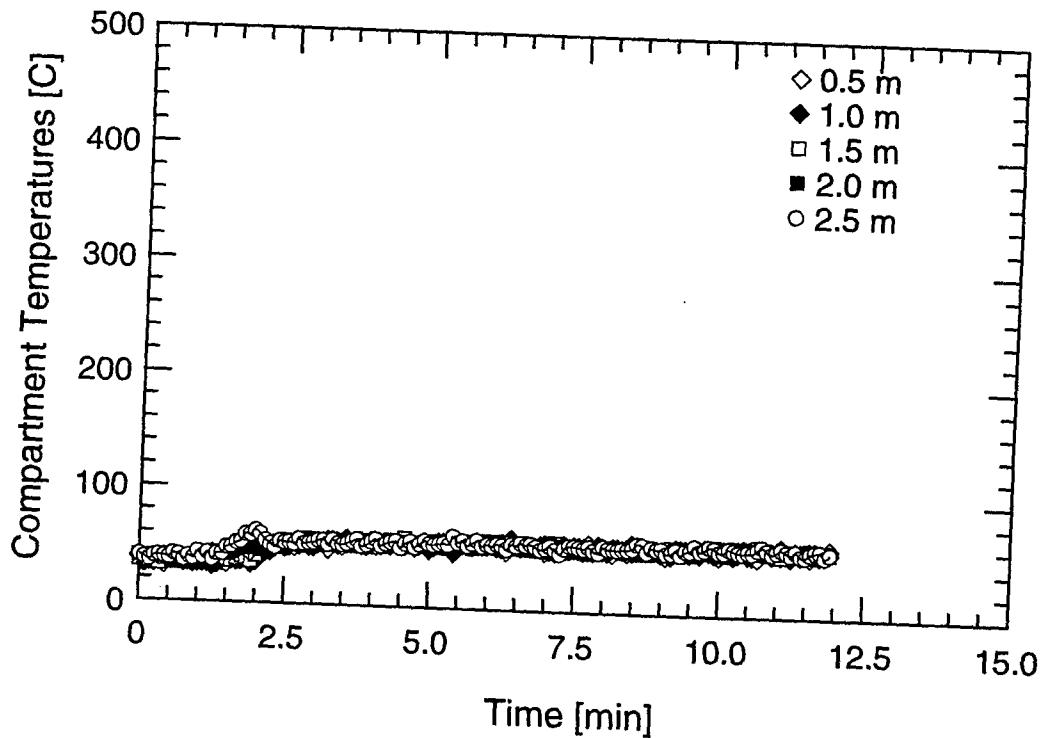
Water Mist System Pressure

TEST #65

B-393



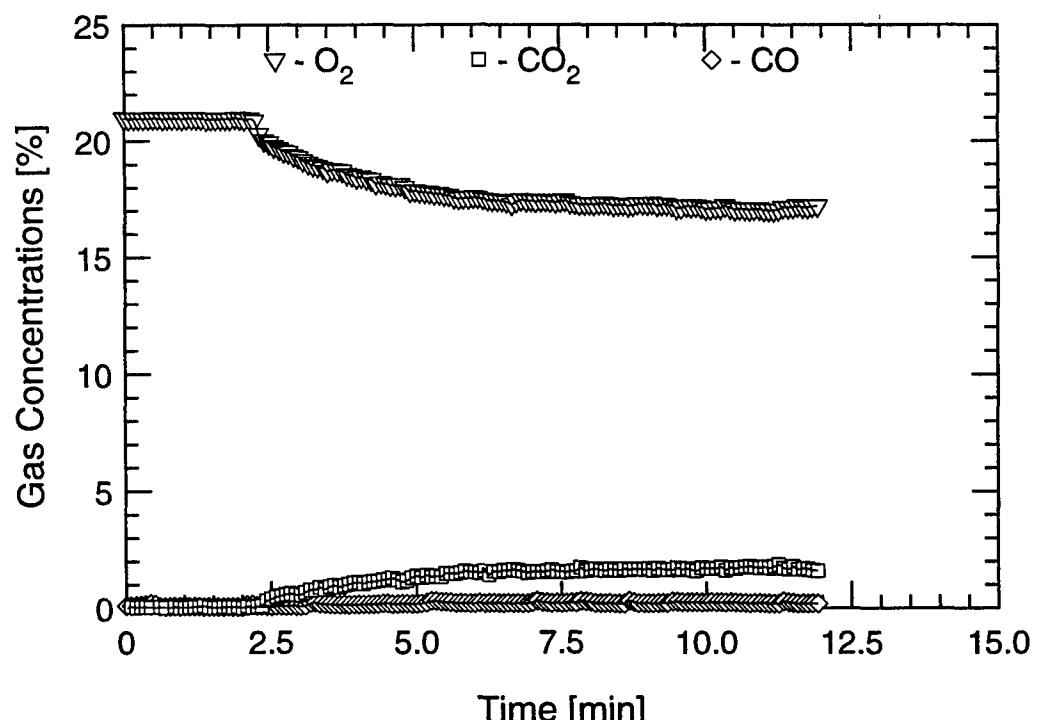
Aft Tree



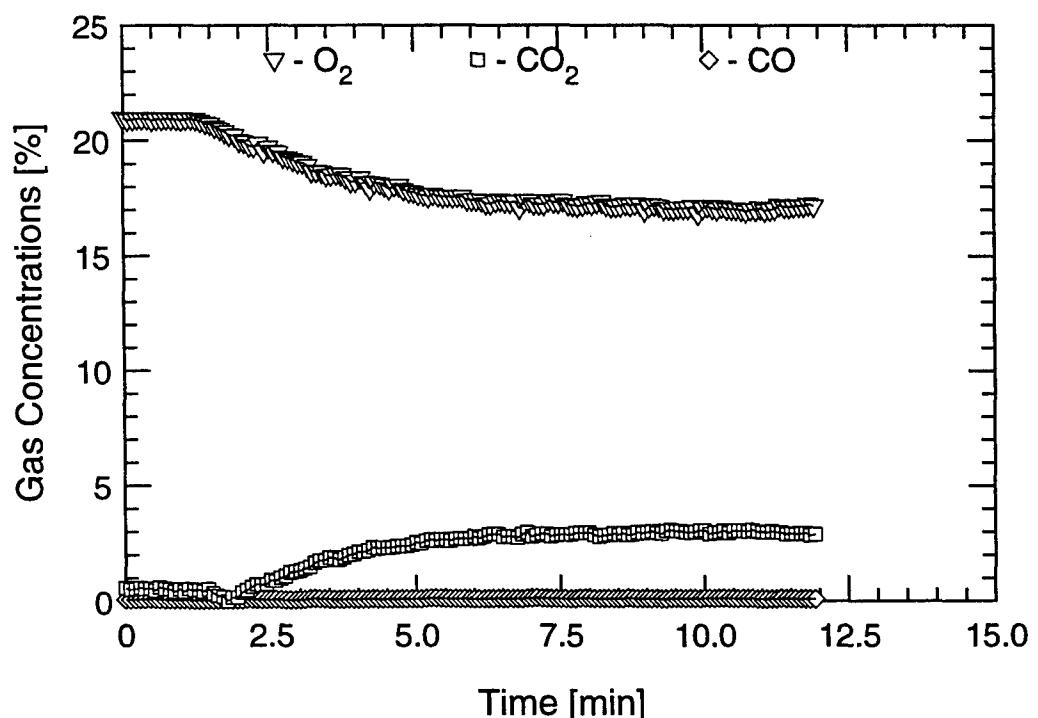
Forward Tree

TEST #66

B-394



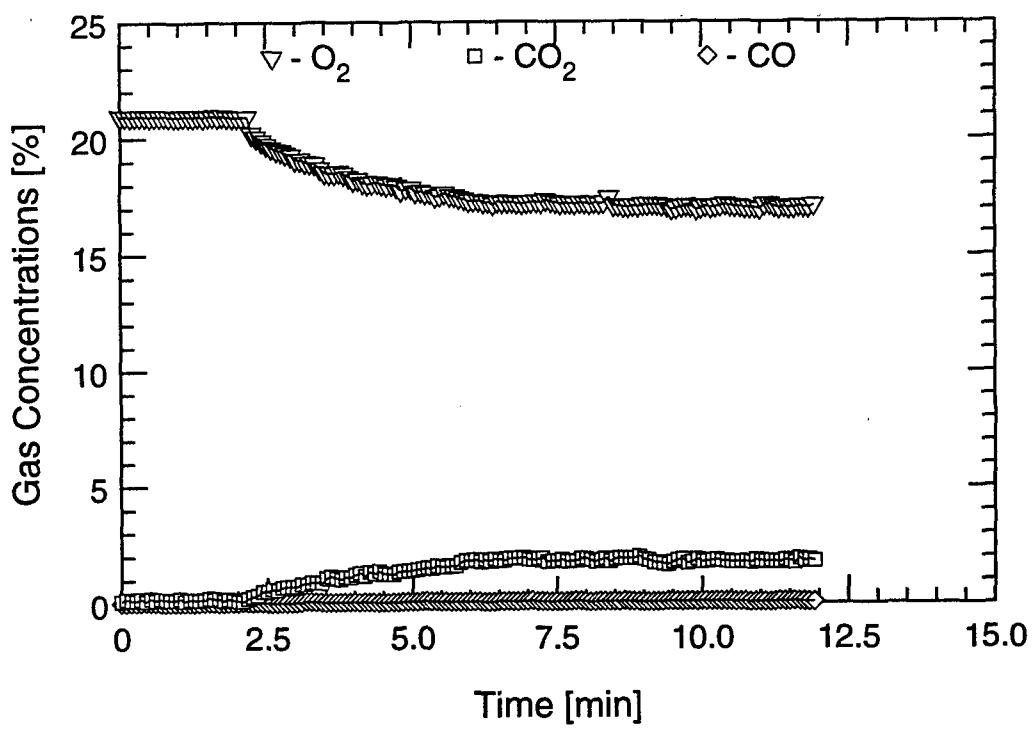
Aft Tree (Low)



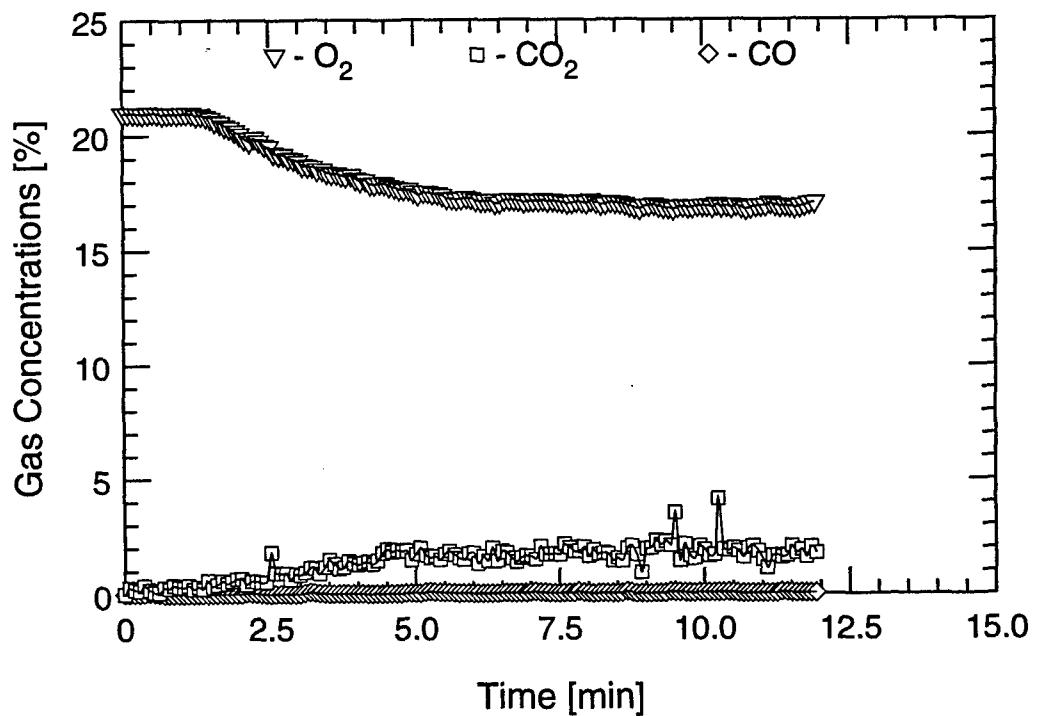
Aft Tree (High)

TEST #66

B-395



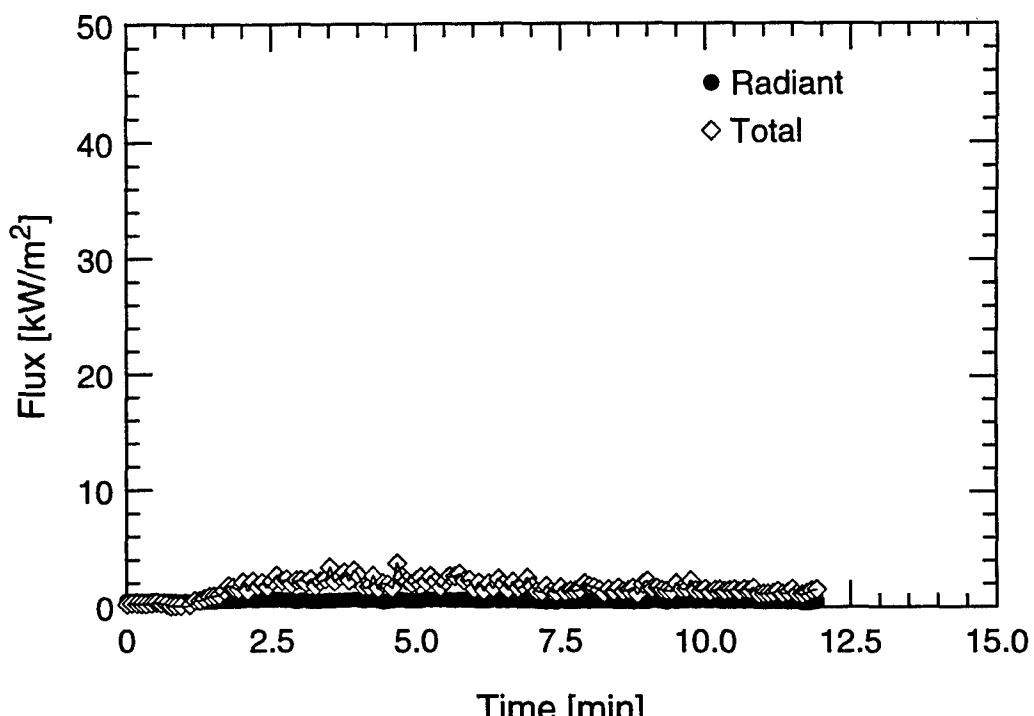
Forward Tree (Low)



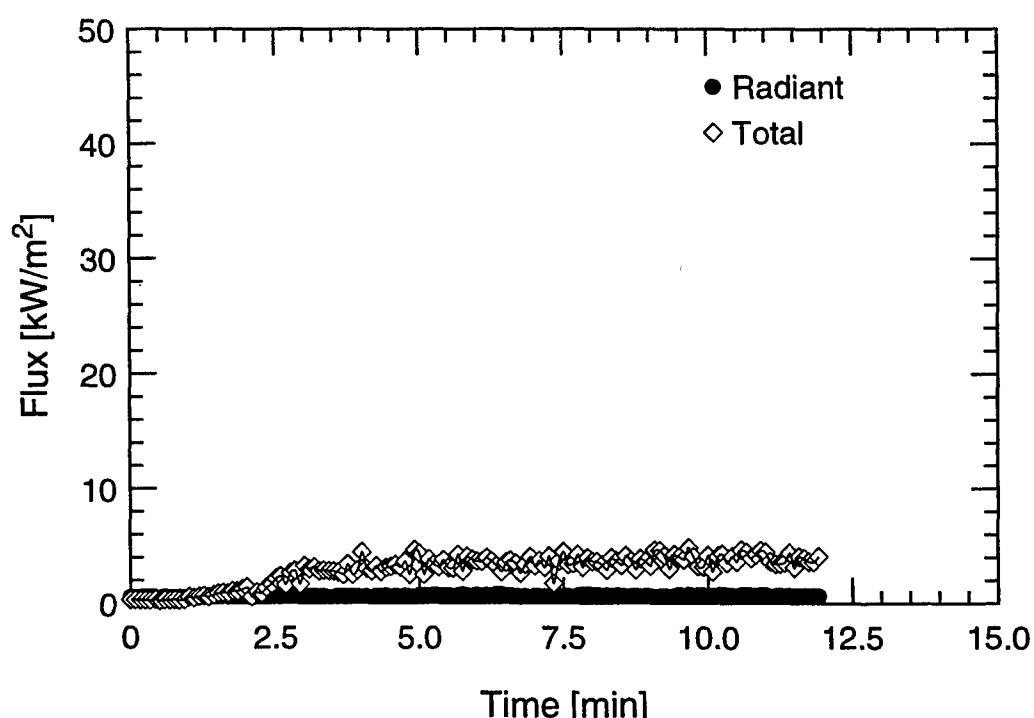
Forward Tree (High)

TEST #66

B-396

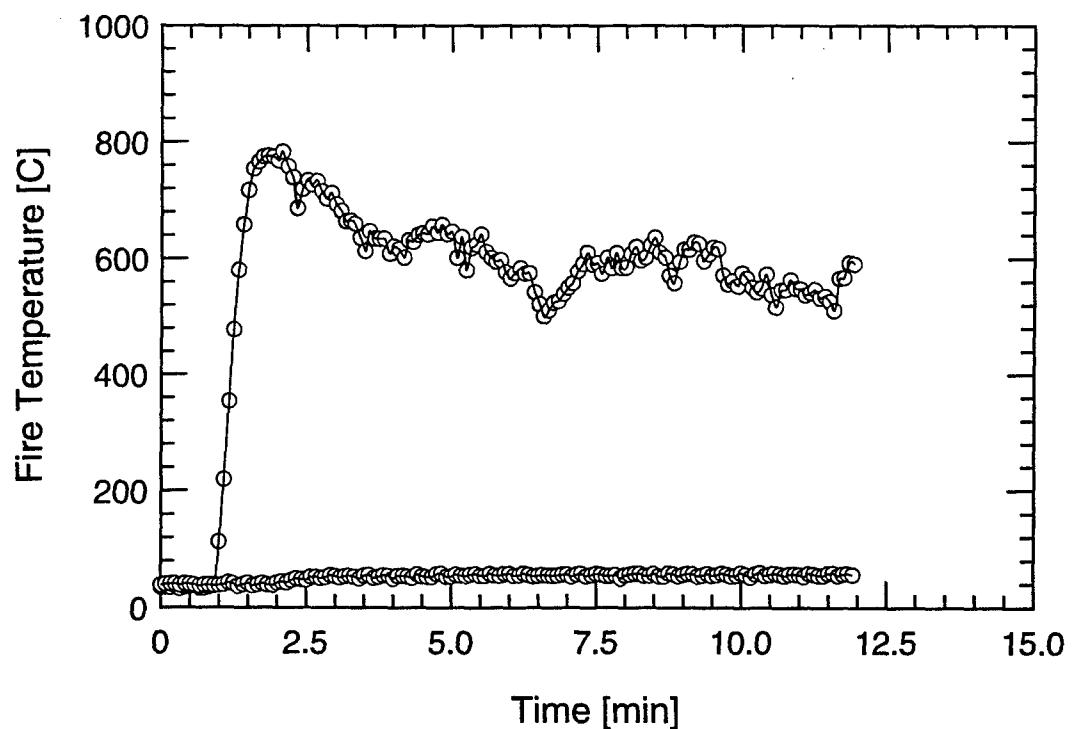


Overhead



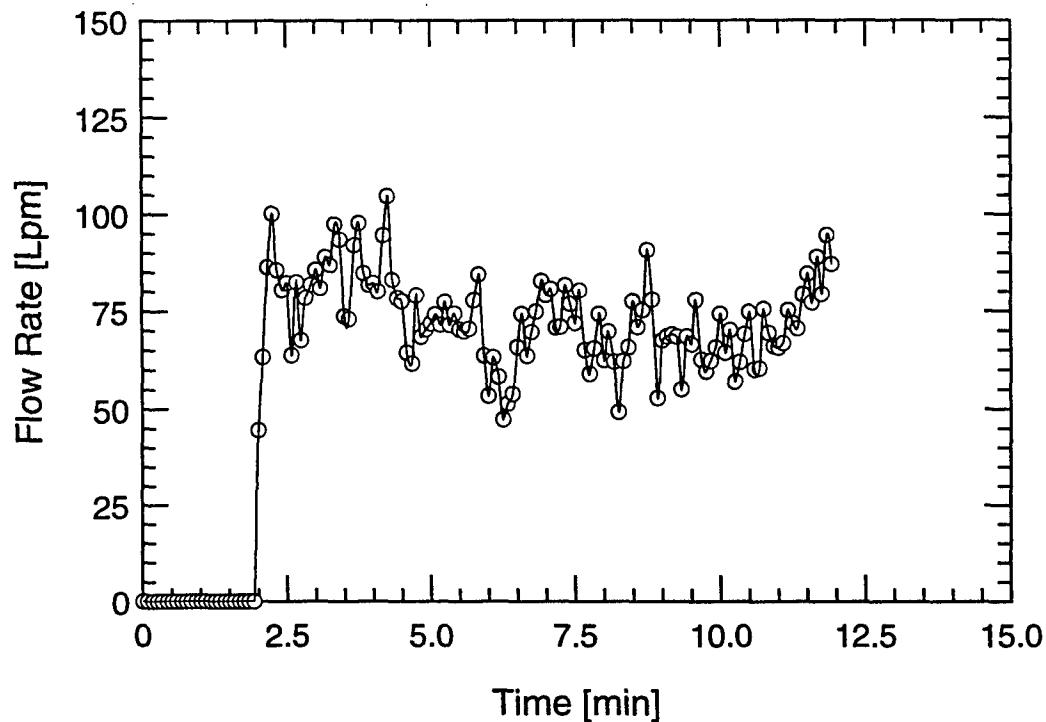
Forward Bulkhead

TEST #66

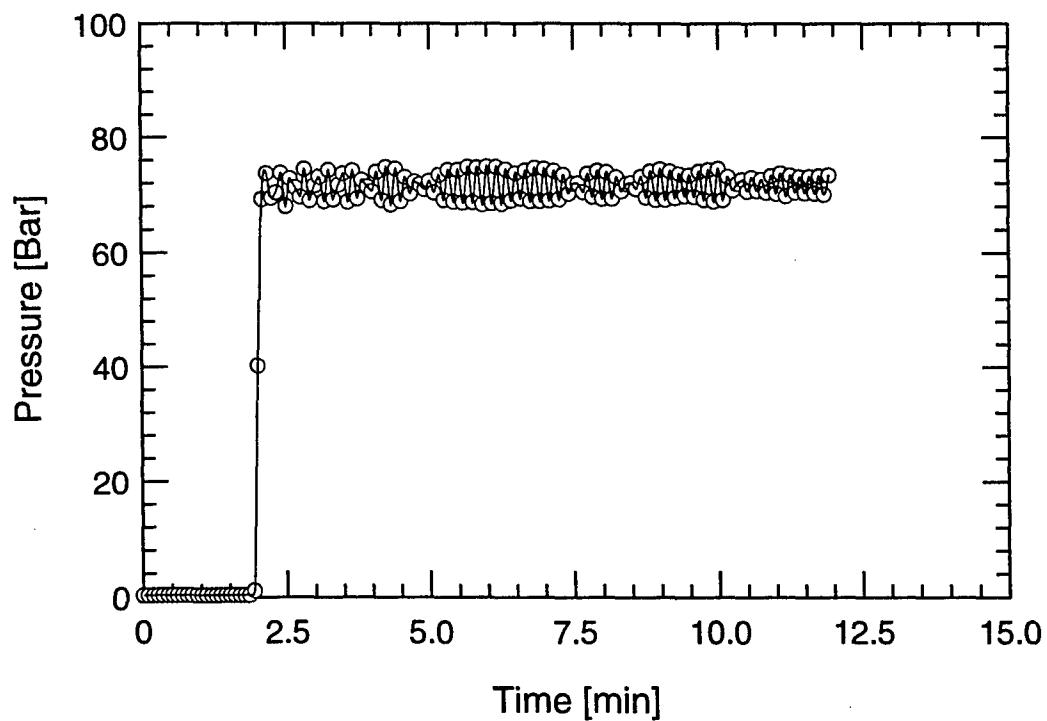


TEST #66

B-398



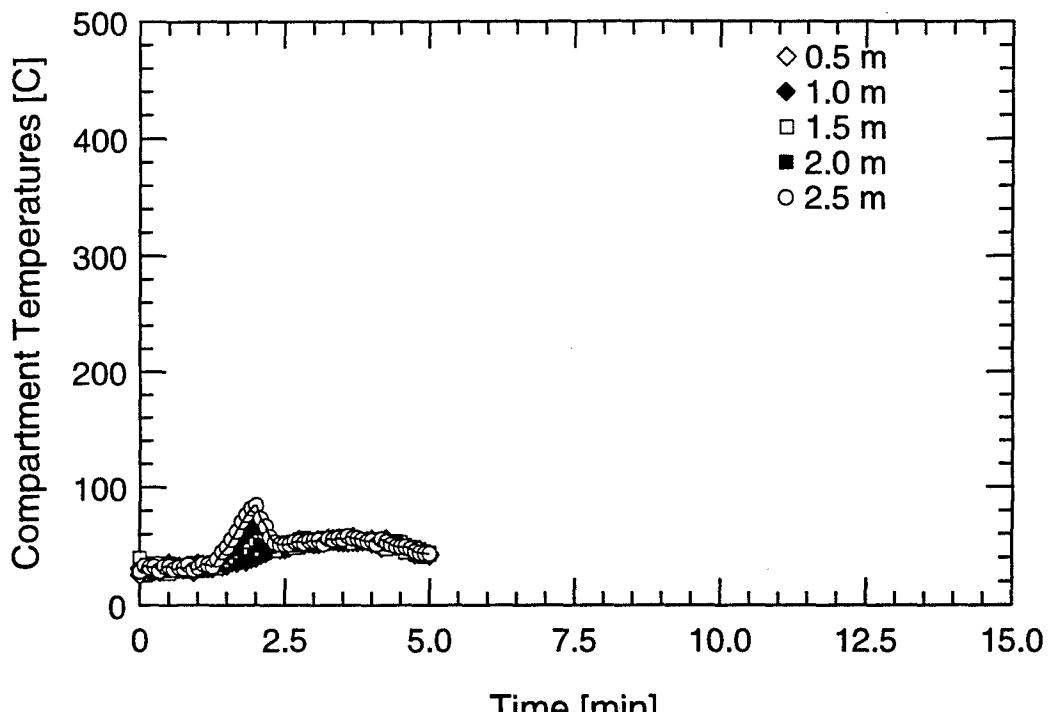
Water Mist System Flow Rate



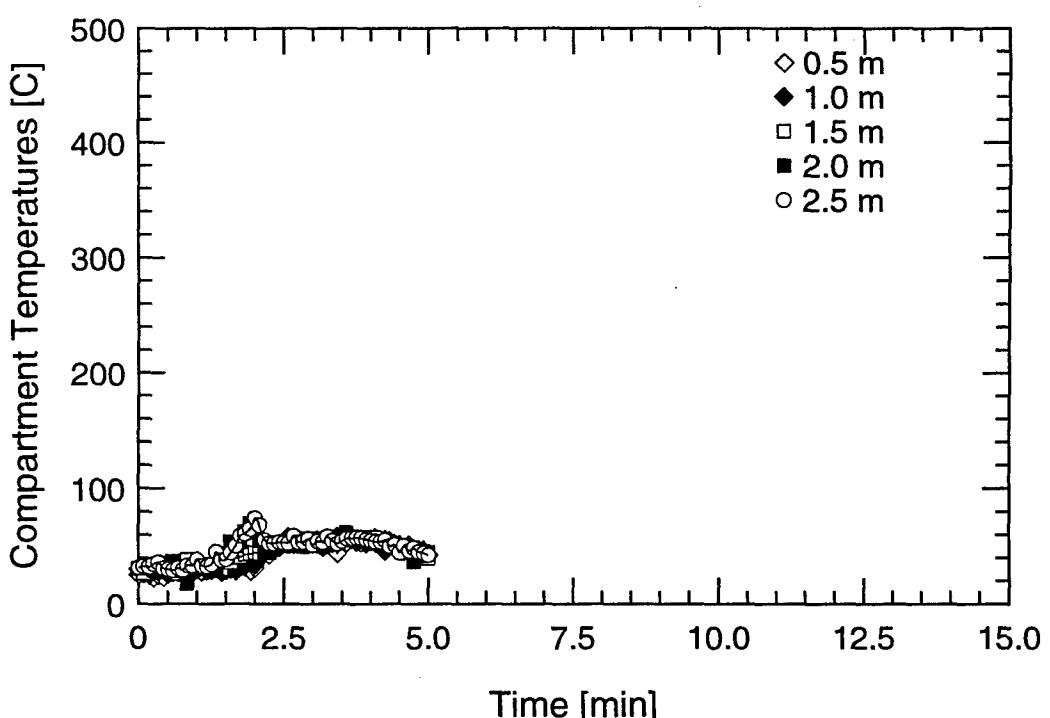
Water Mist System Pressure

TEST #66

B-399



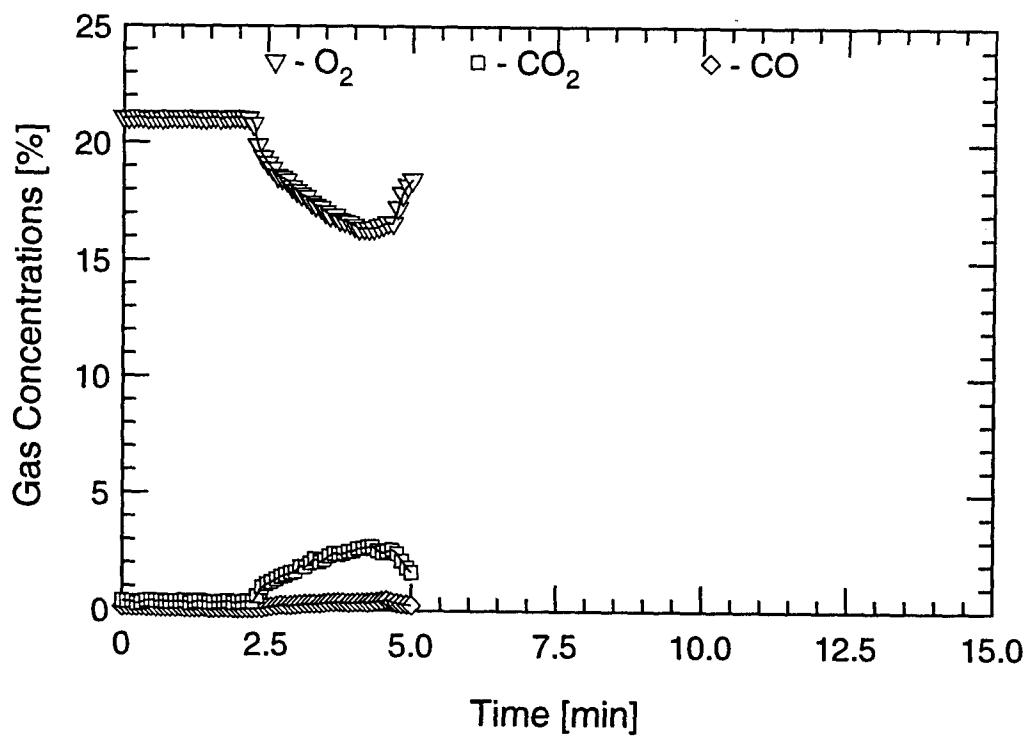
Aft Tree



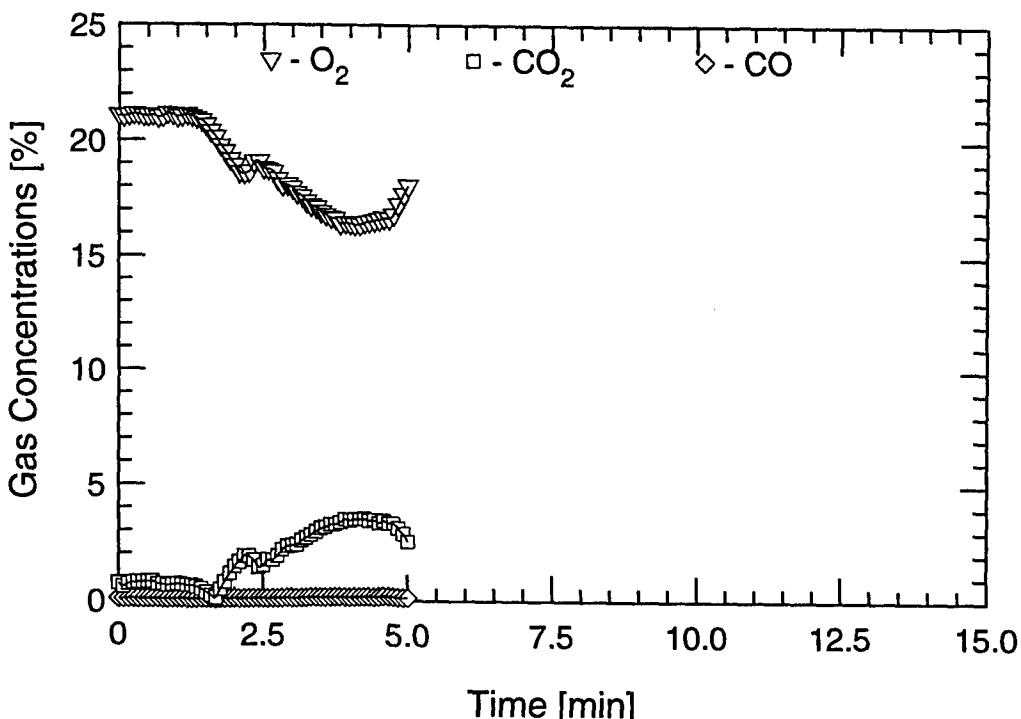
Forward Tree

TEST #67

B-400



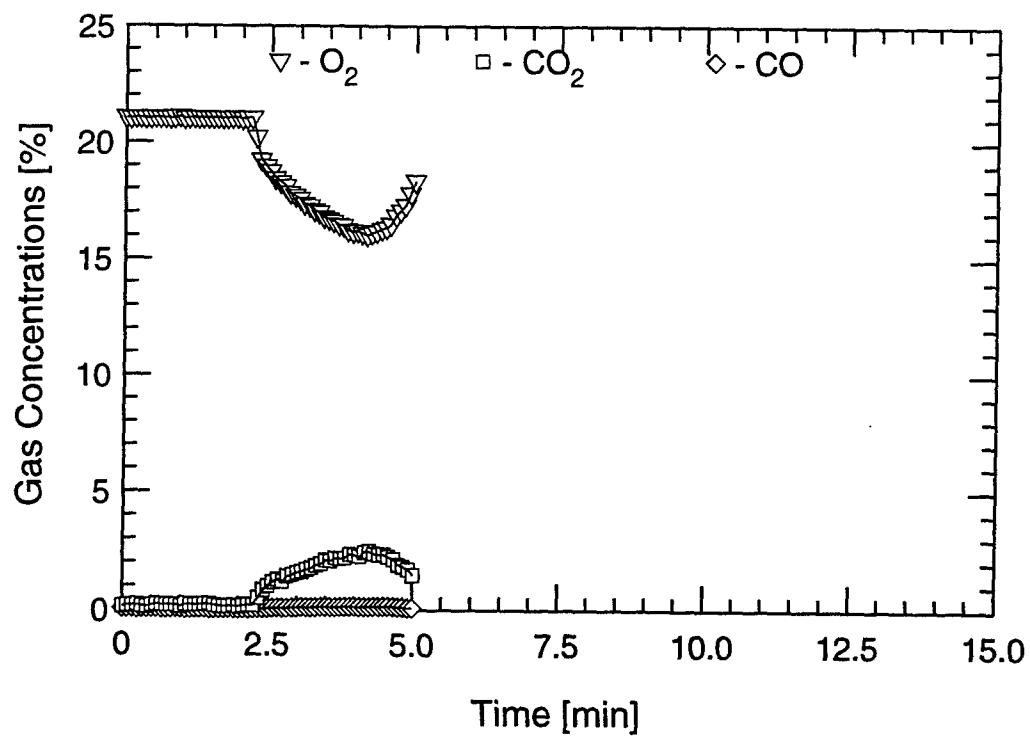
Aft Tree (Low)



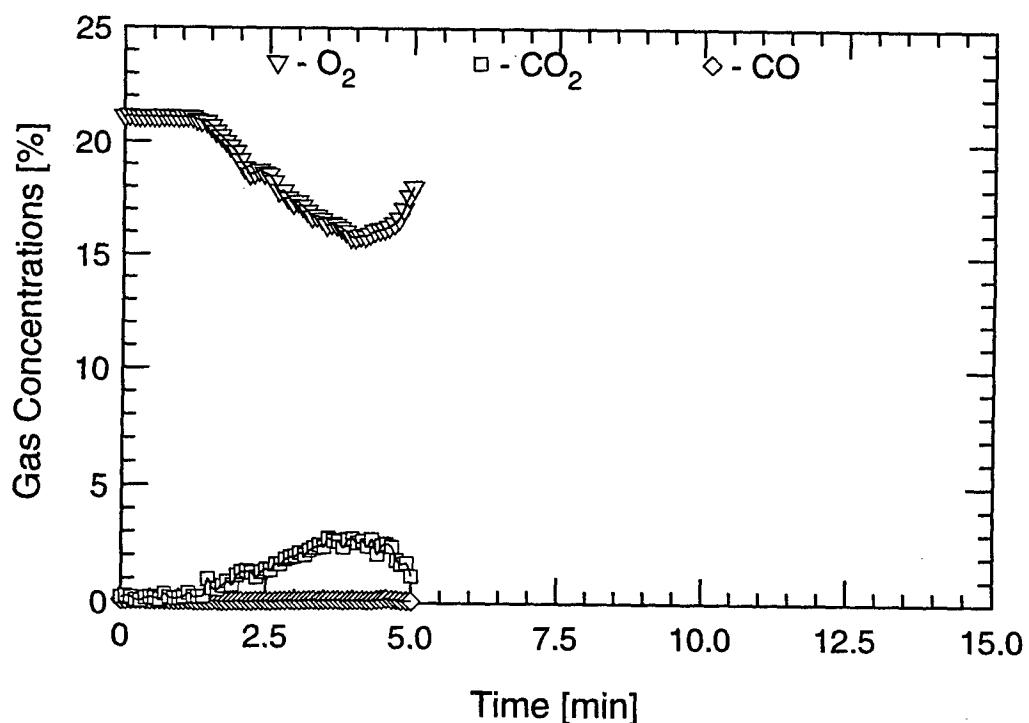
Aft Tree (High)

TEST #67

B-401



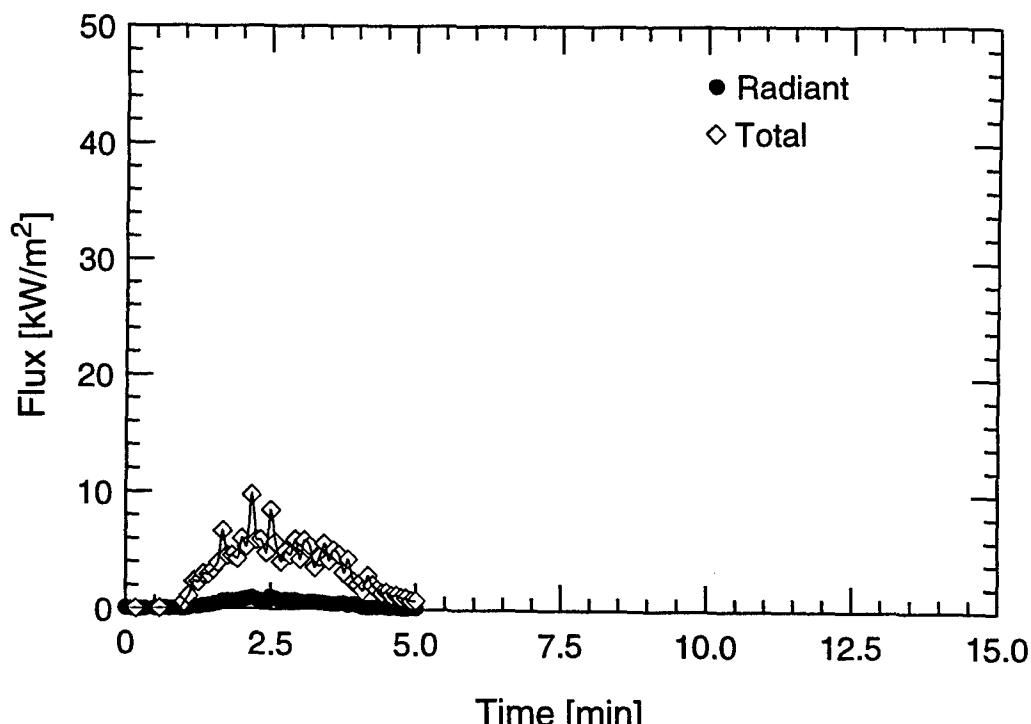
Forward Tree (Low)



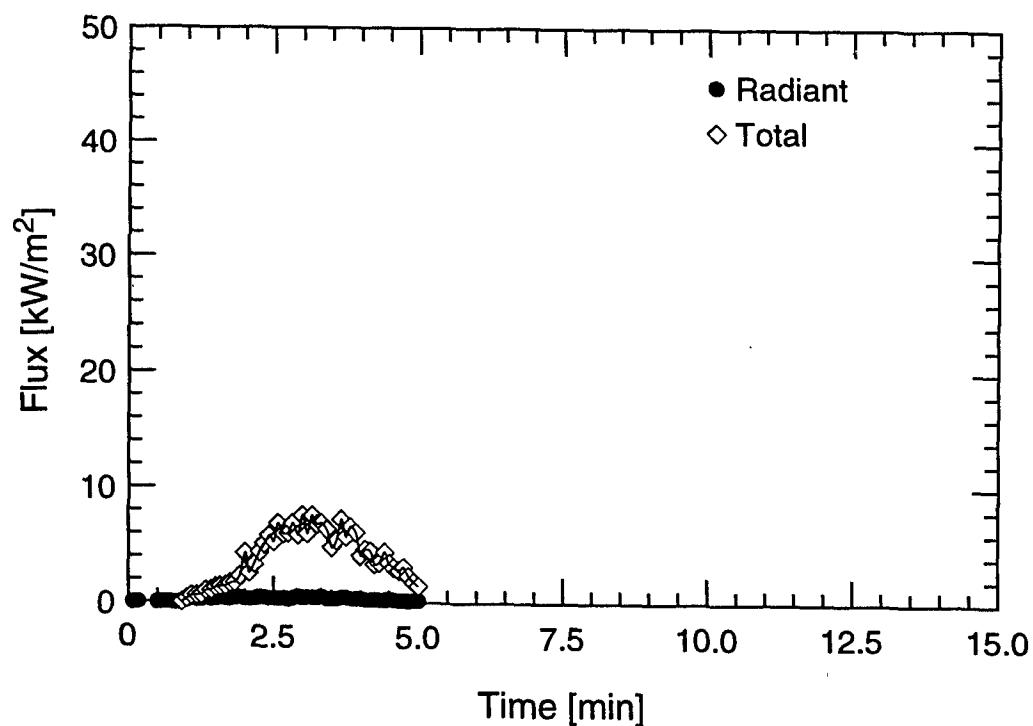
Forward Tree (High)

TEST #67

B-402



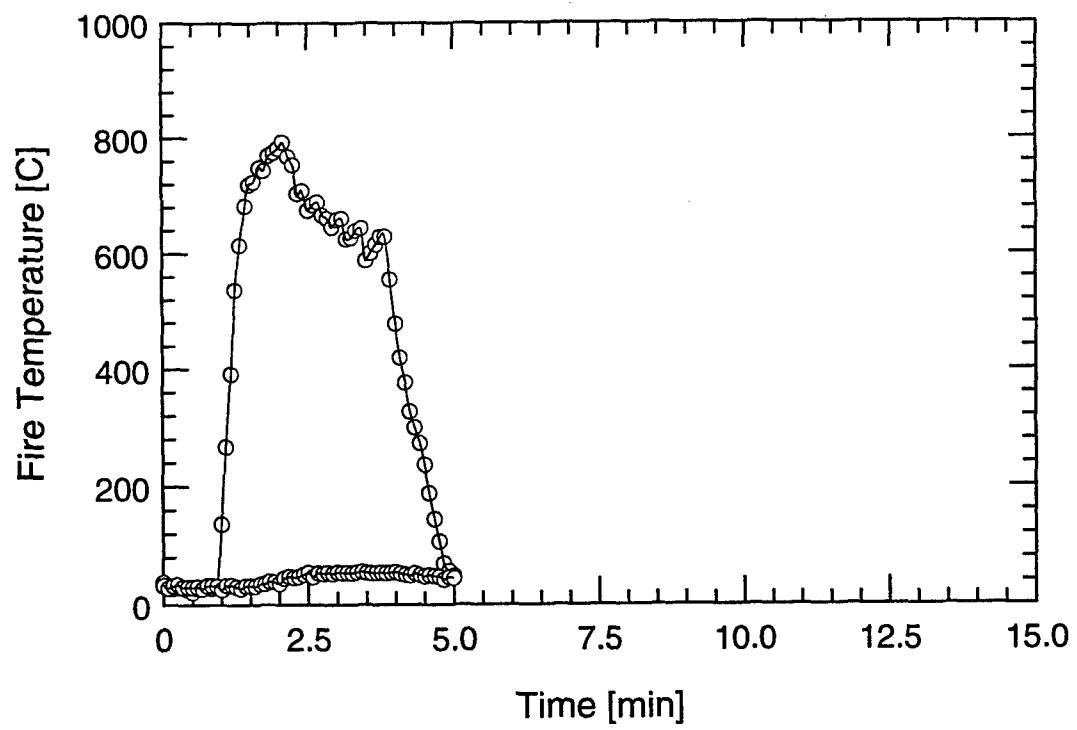
Overhead



Forward Bulkhead

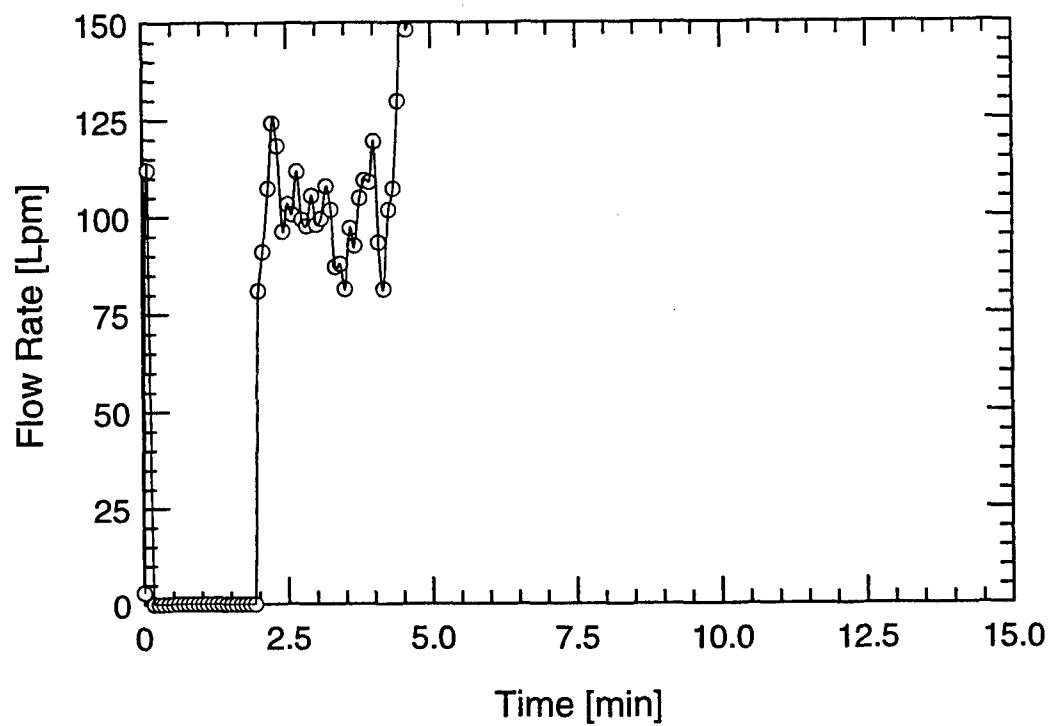
TEST #67

B-403

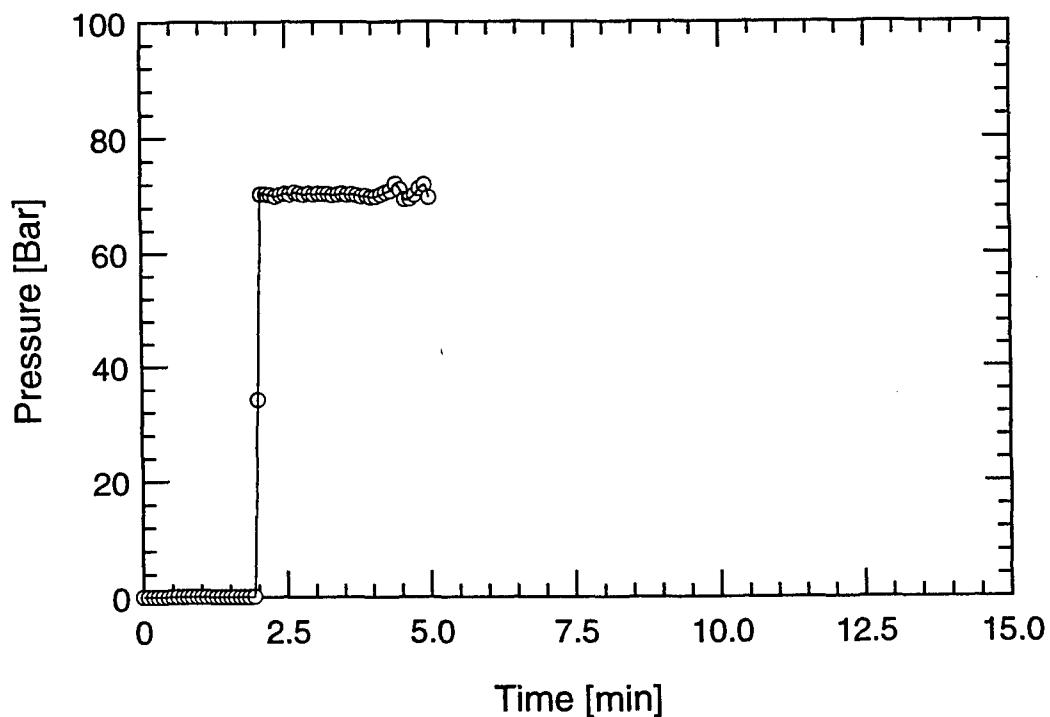


TEST #67

B-404



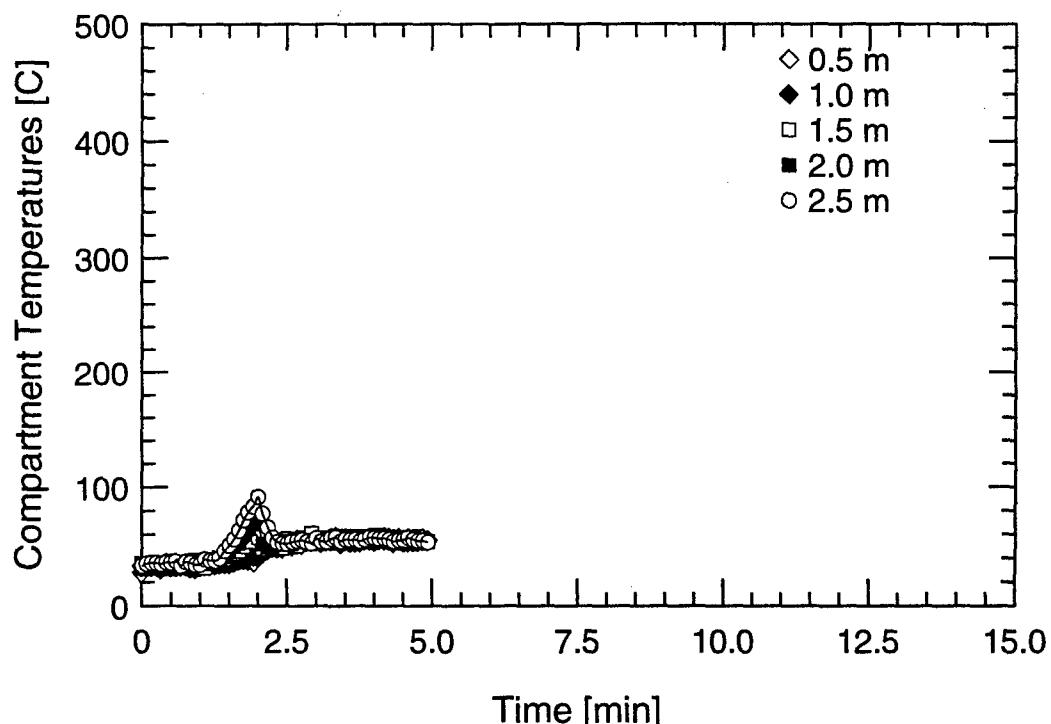
Water Mist System Flow Rate



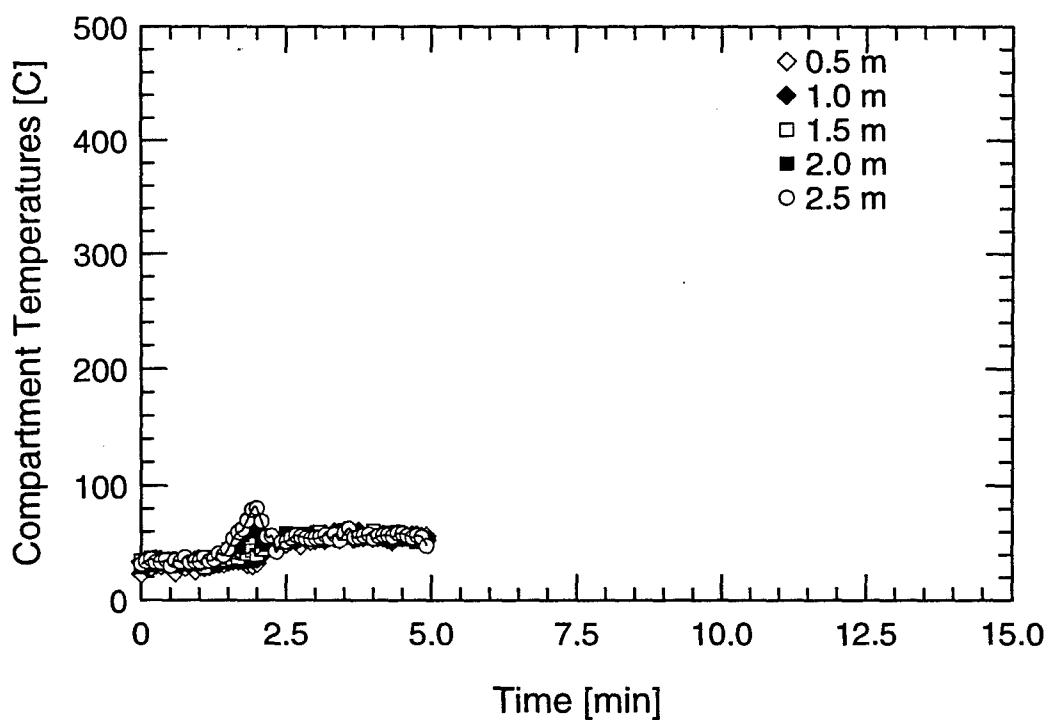
Water Mist System Pressure

TEST #67

B-405



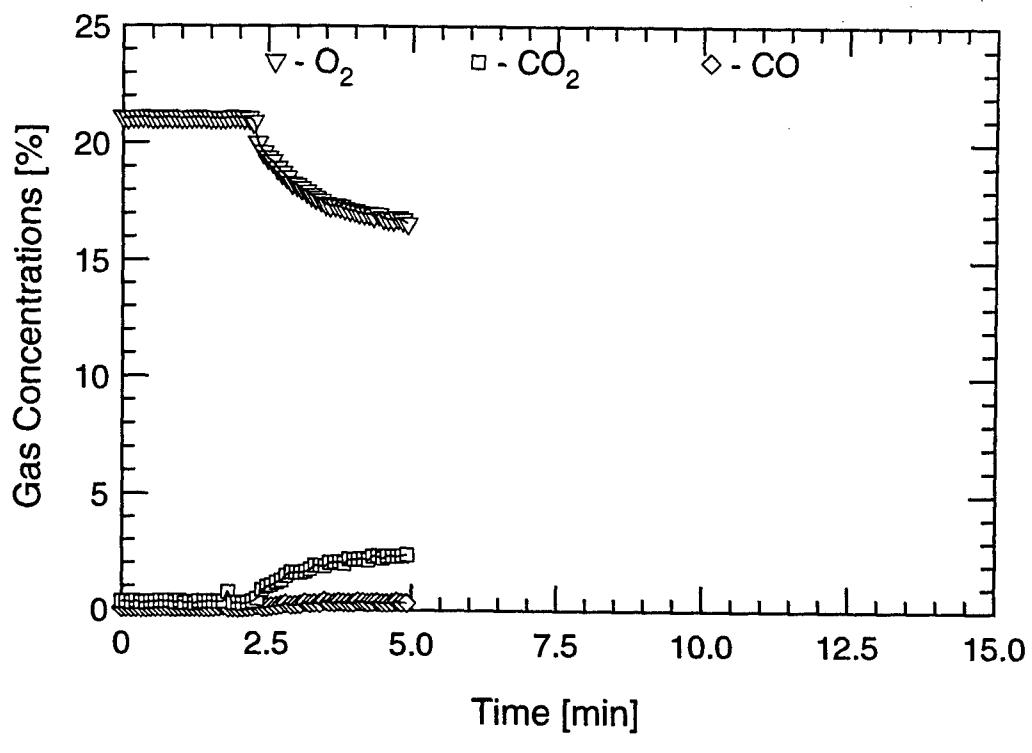
Aft Tree



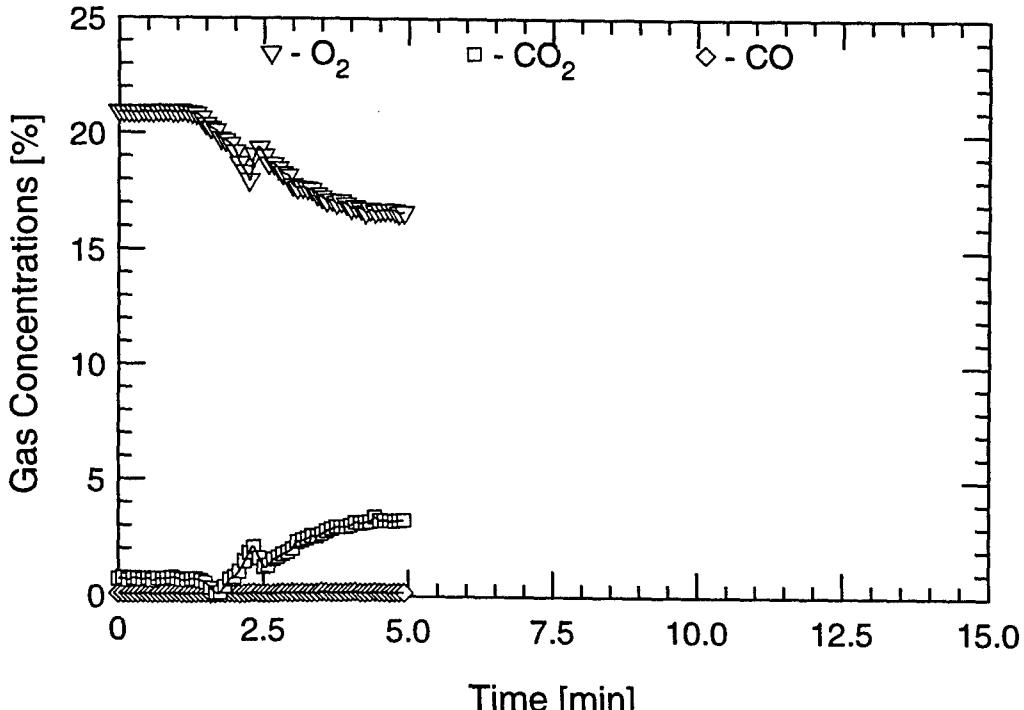
Forward Tree

TEST #68

B-406



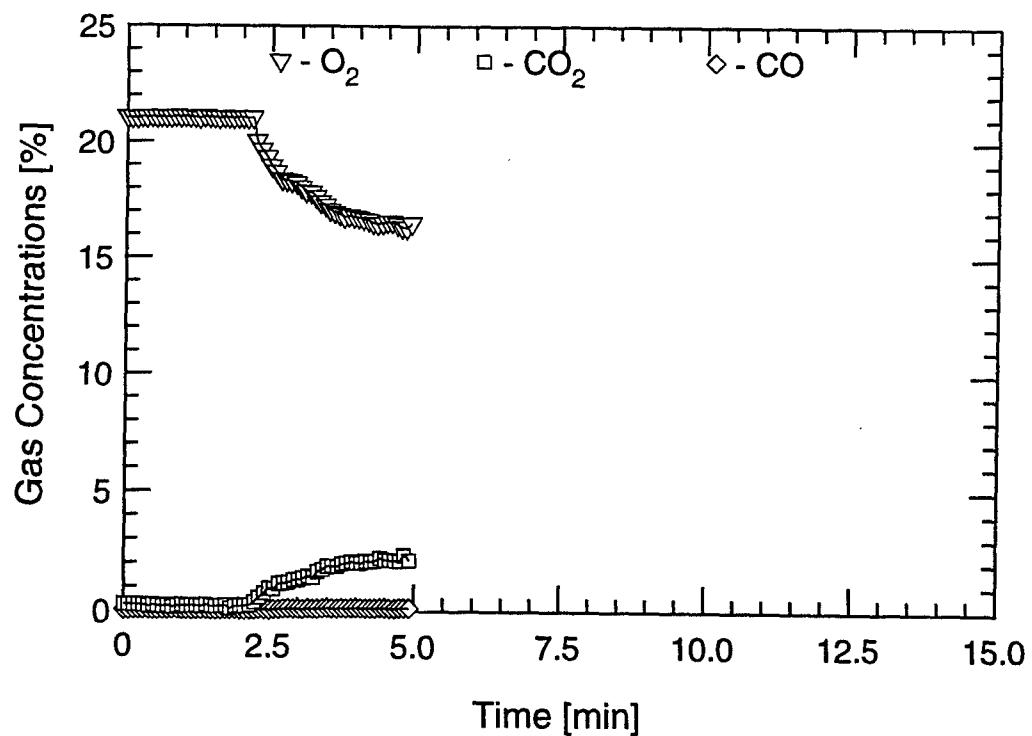
Aft Tree (Low)



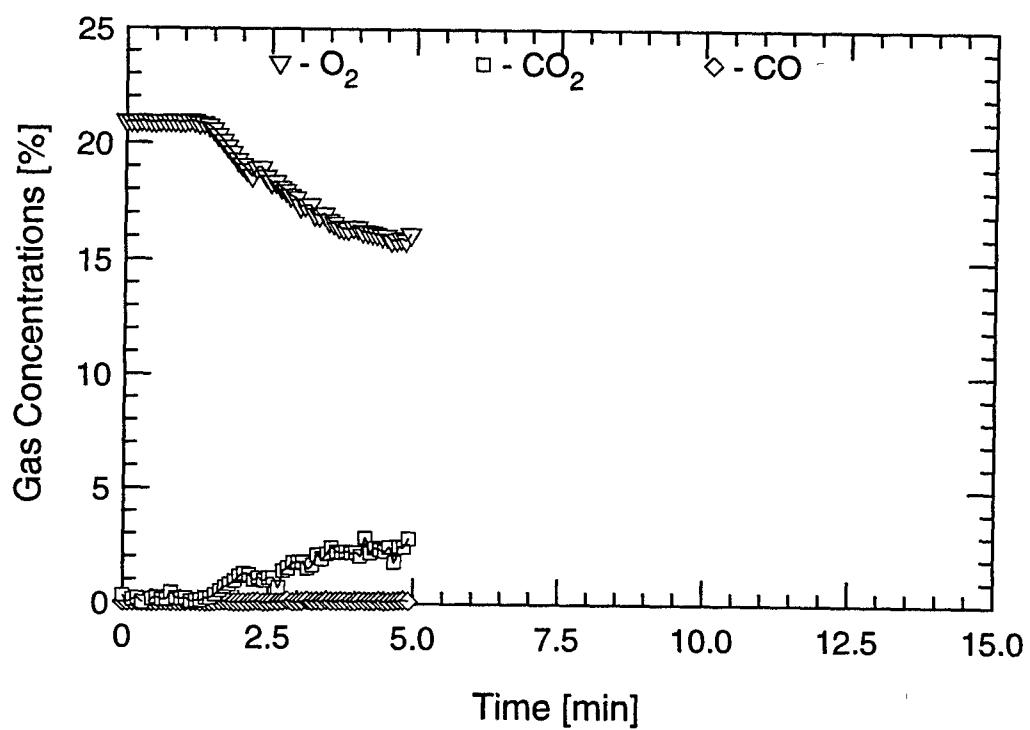
Aft Tree (High)

TEST #68

B-407



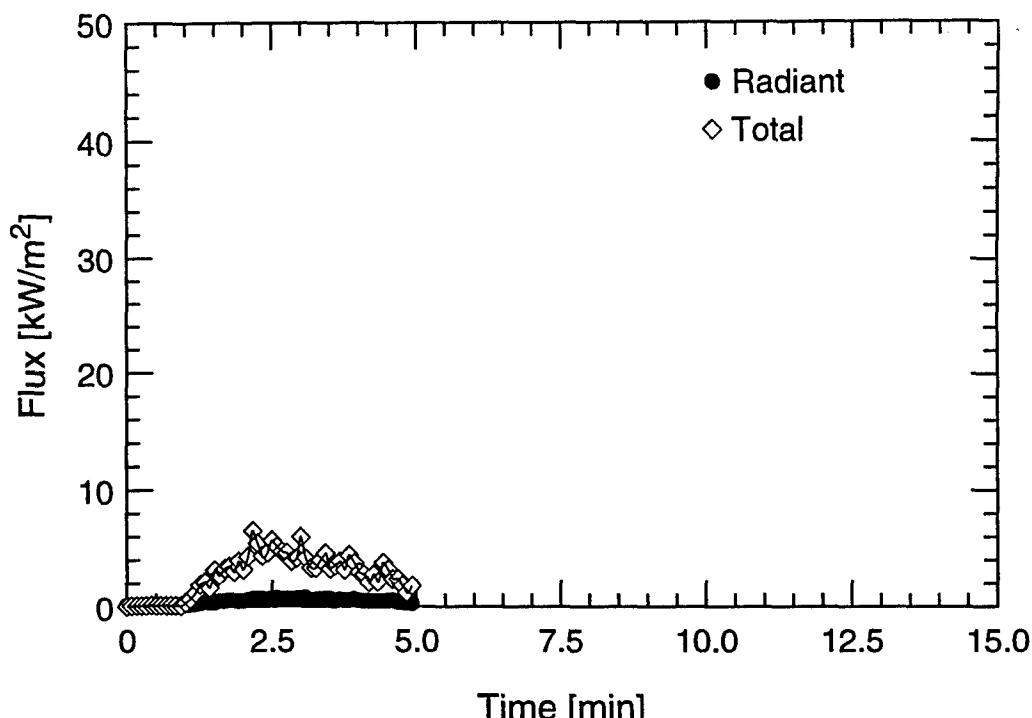
Forward Tree (Low)



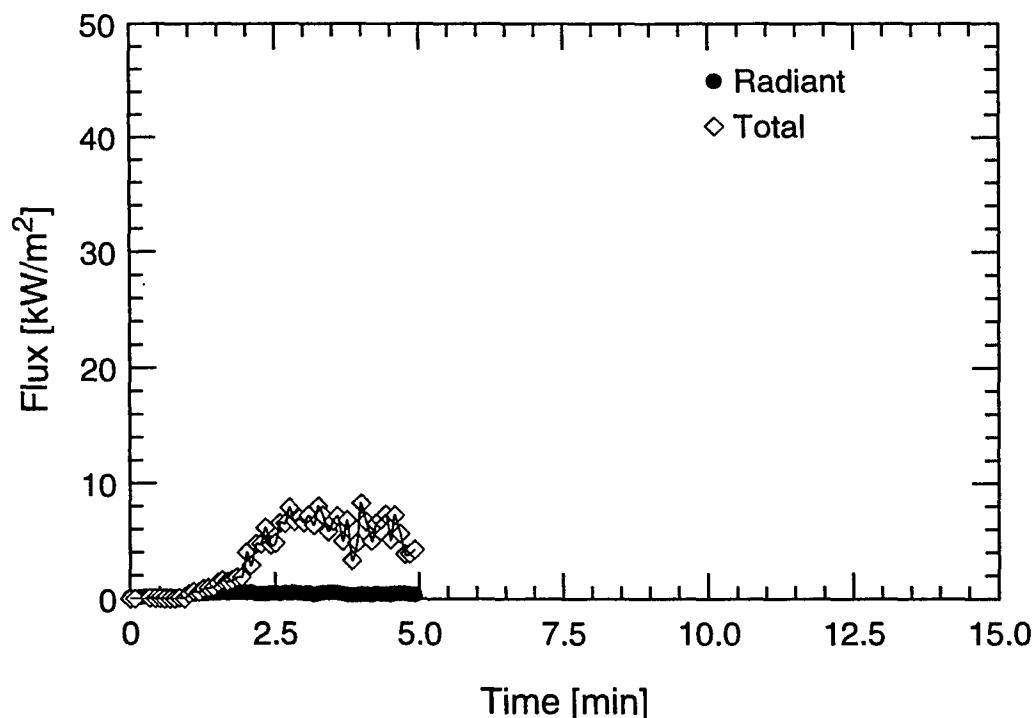
Forward Tree (High)

TEST #68

B-408



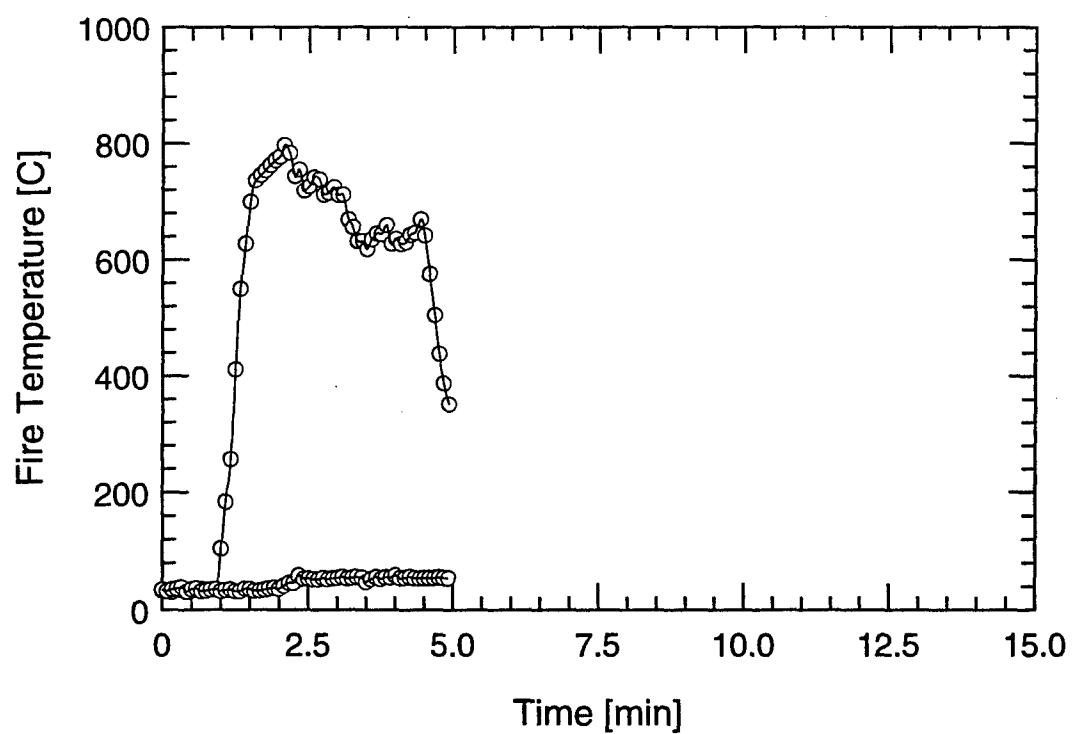
Overhead



Forward Bulkhead

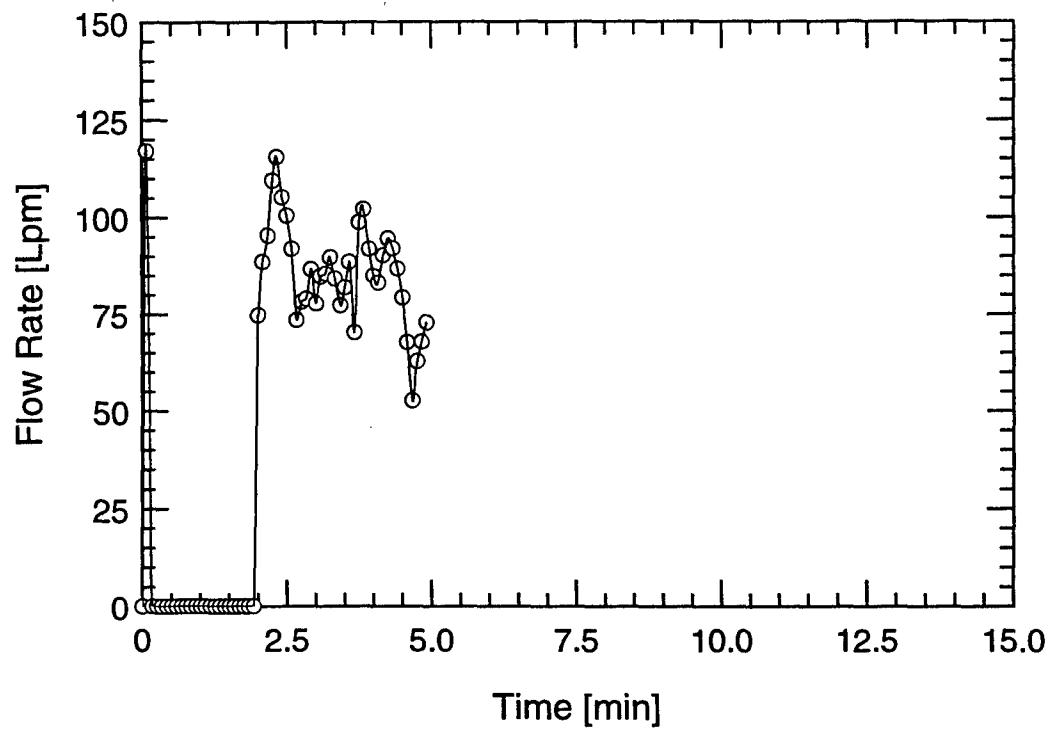
TEST #68

B-409

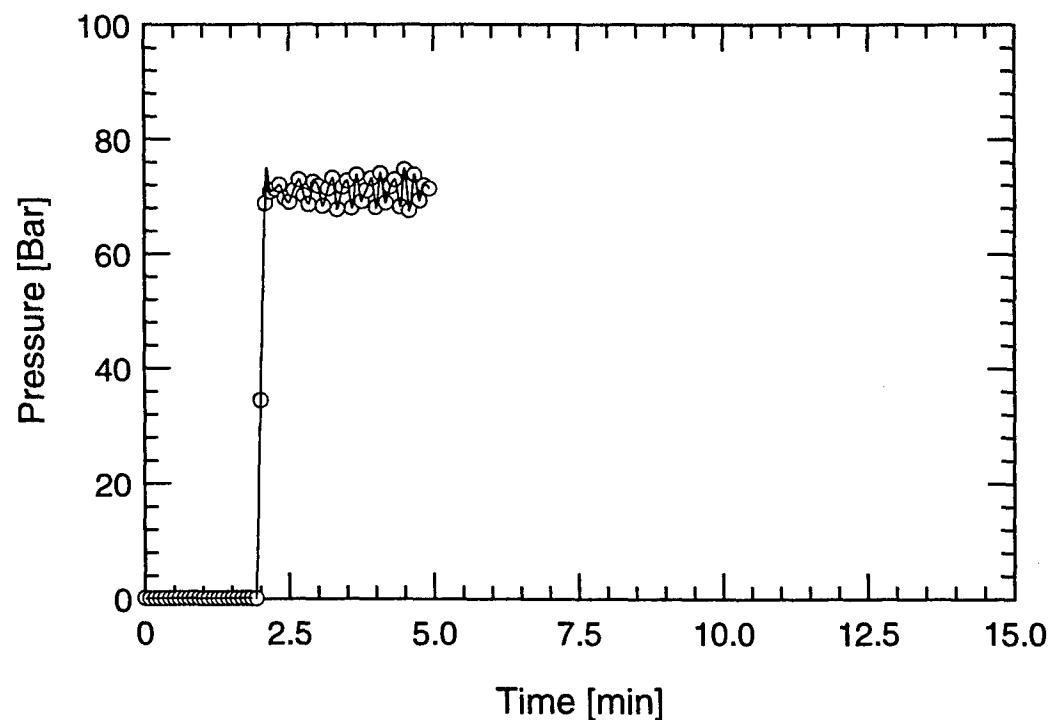


TEST #68

B-410



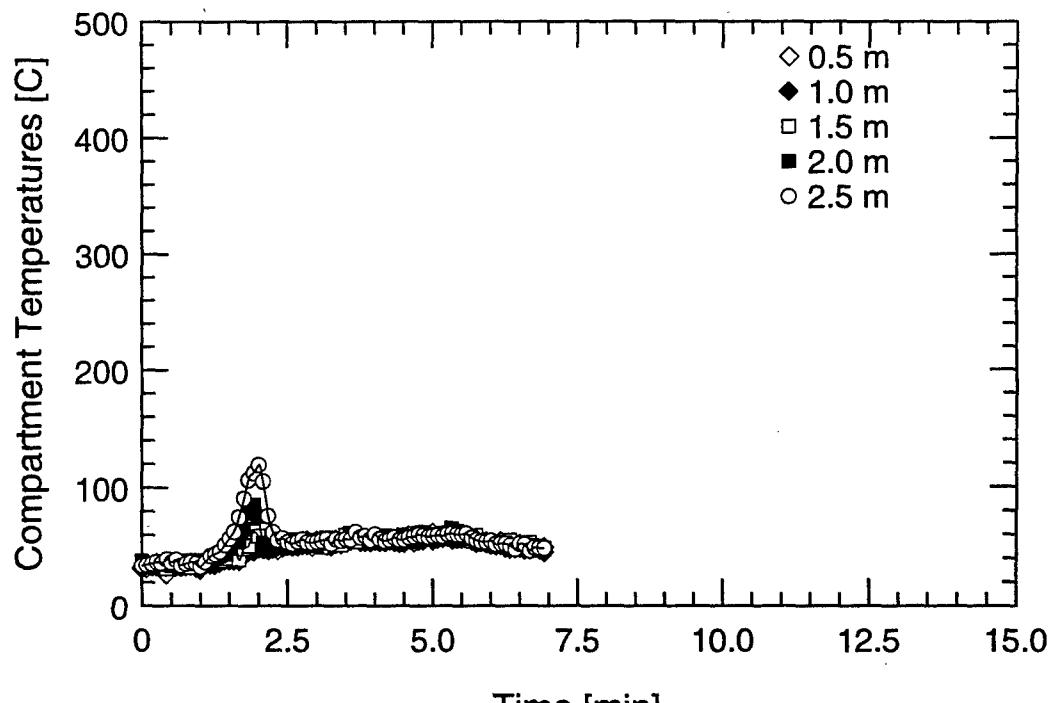
Water Mist System Flow Rate



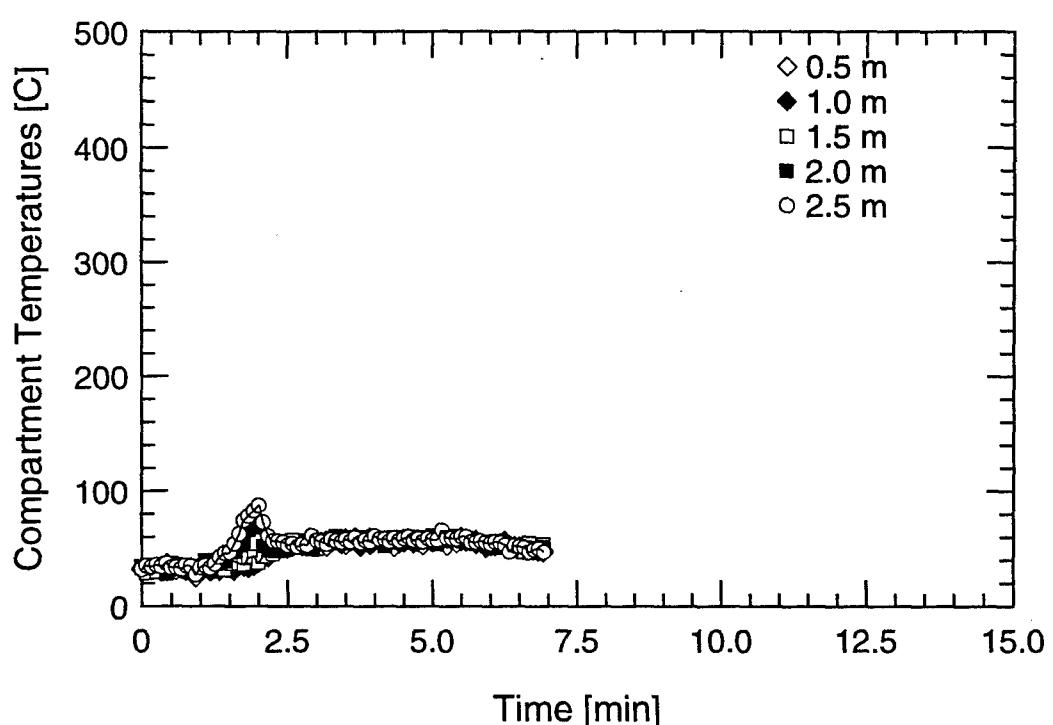
Water Mist System Pressure

TEST #68

B-411



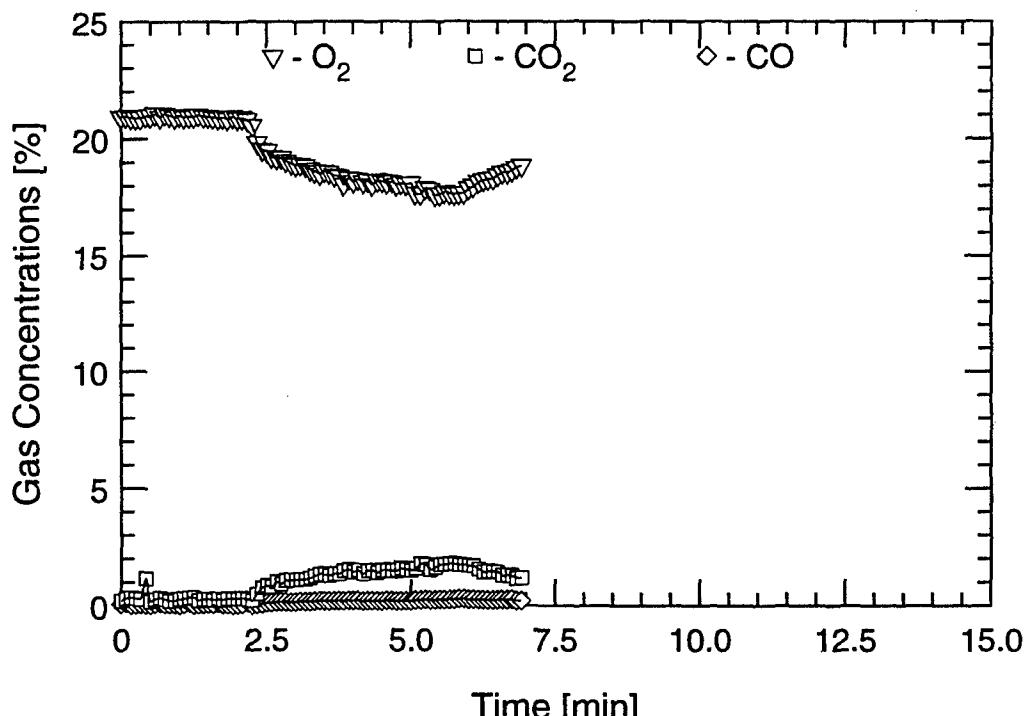
Aft Tree



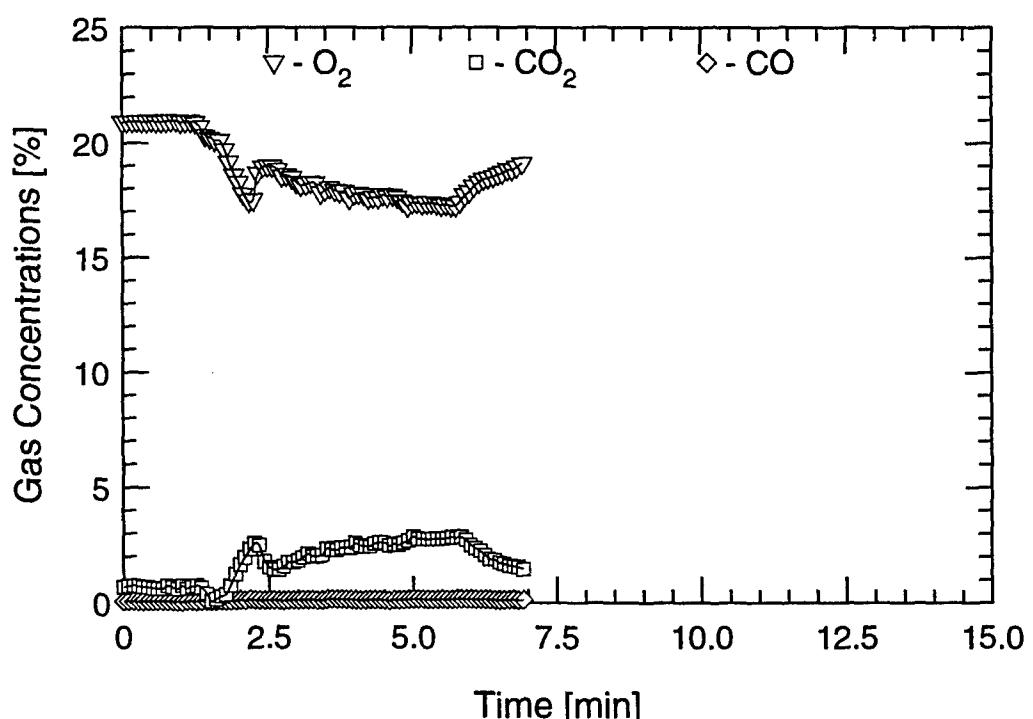
Forward Tree

TEST #69

B-412



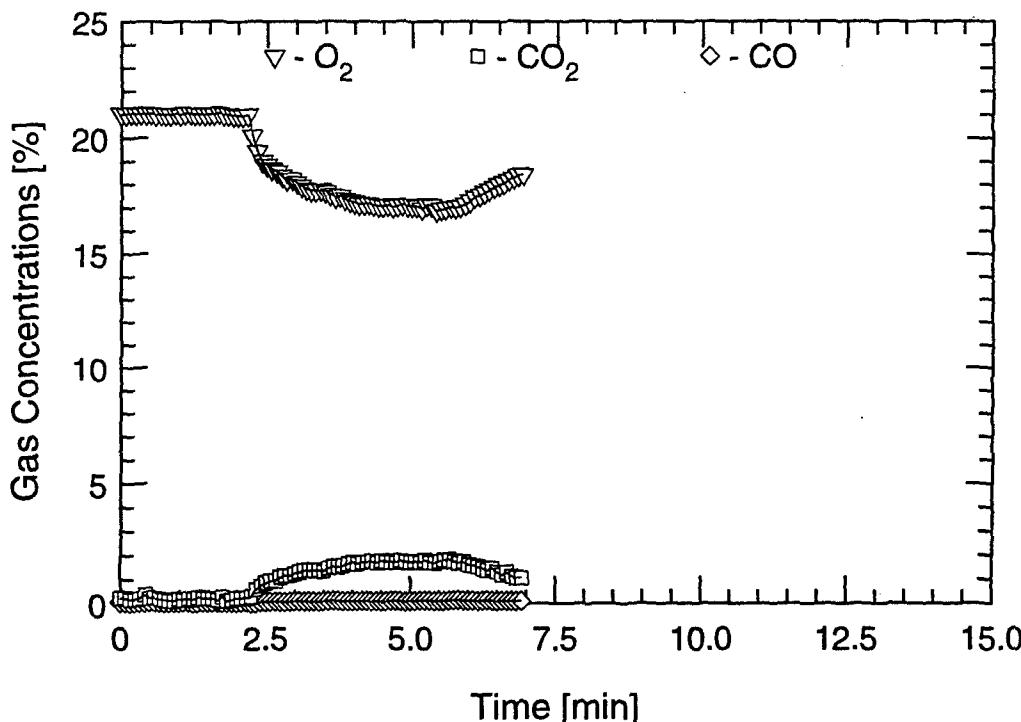
Aft Tree (Low)



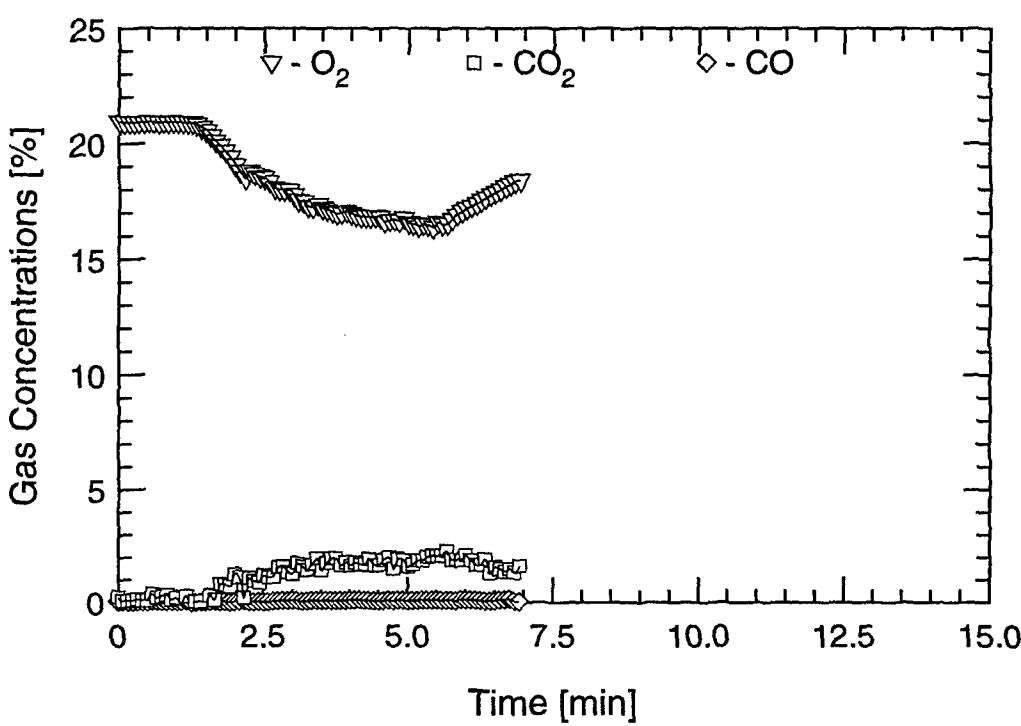
Aft Tree (High)

TEST #69

B-413



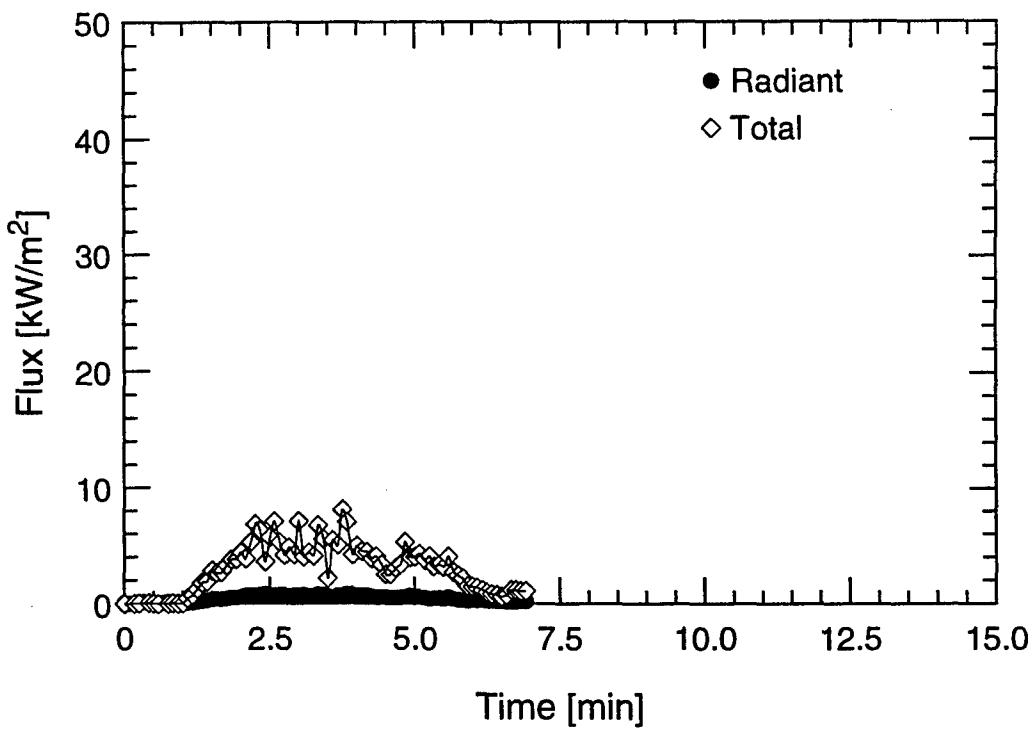
Forward Tree (Low)



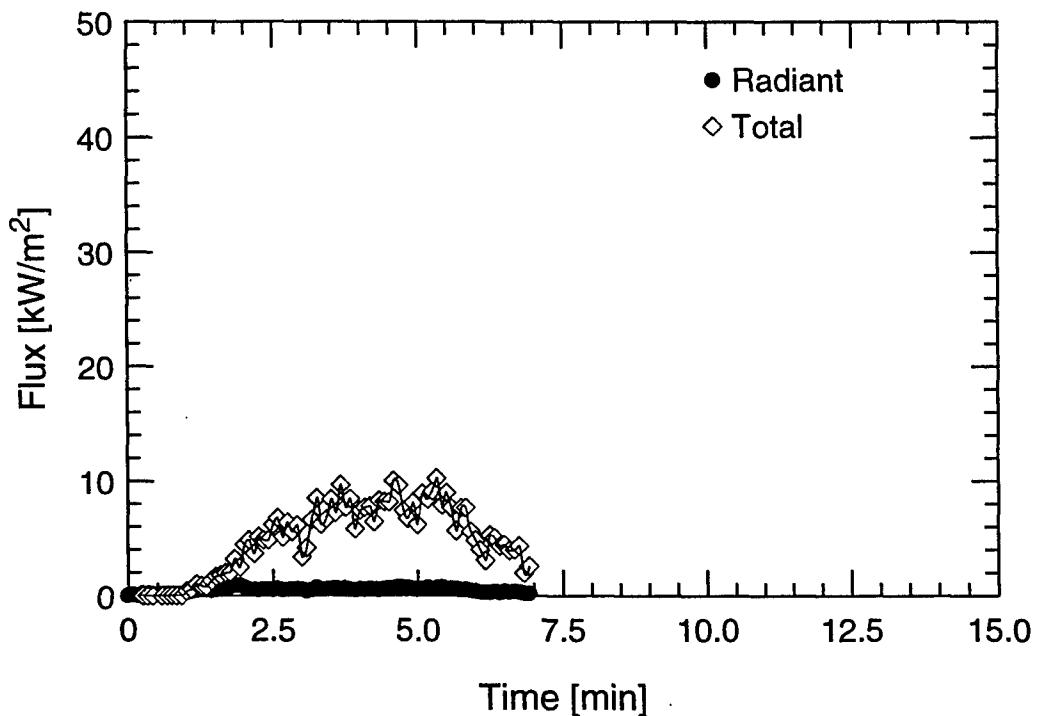
Forward Tree (High)

TEST #69

B-414

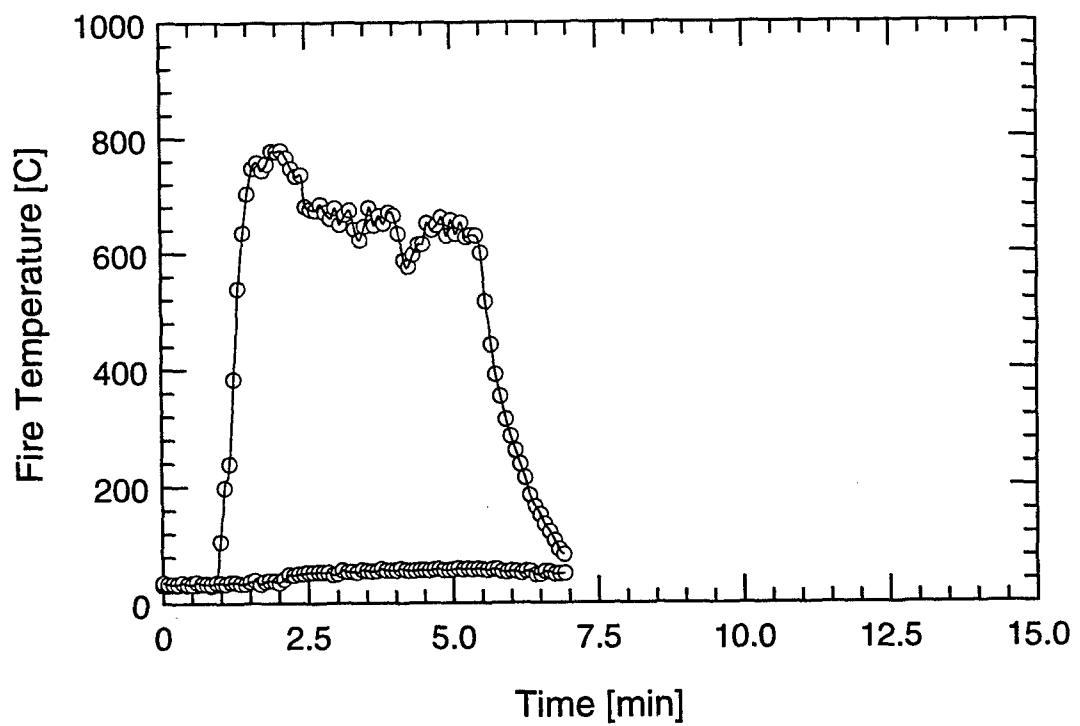


Overhead



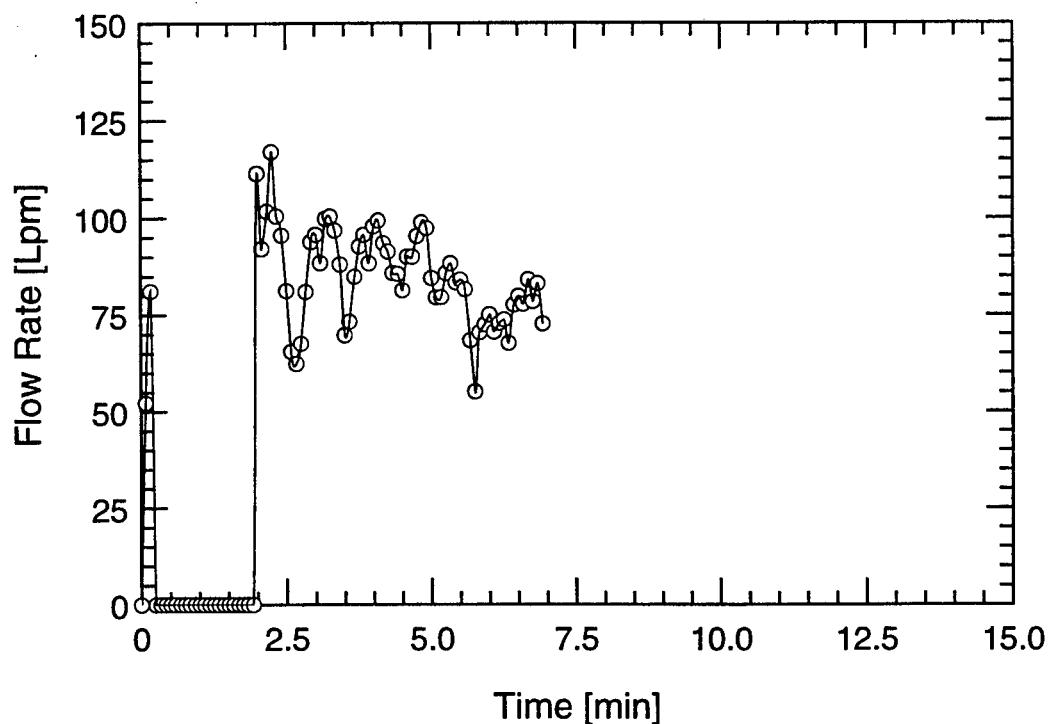
Forward Bulkhead

TEST #69

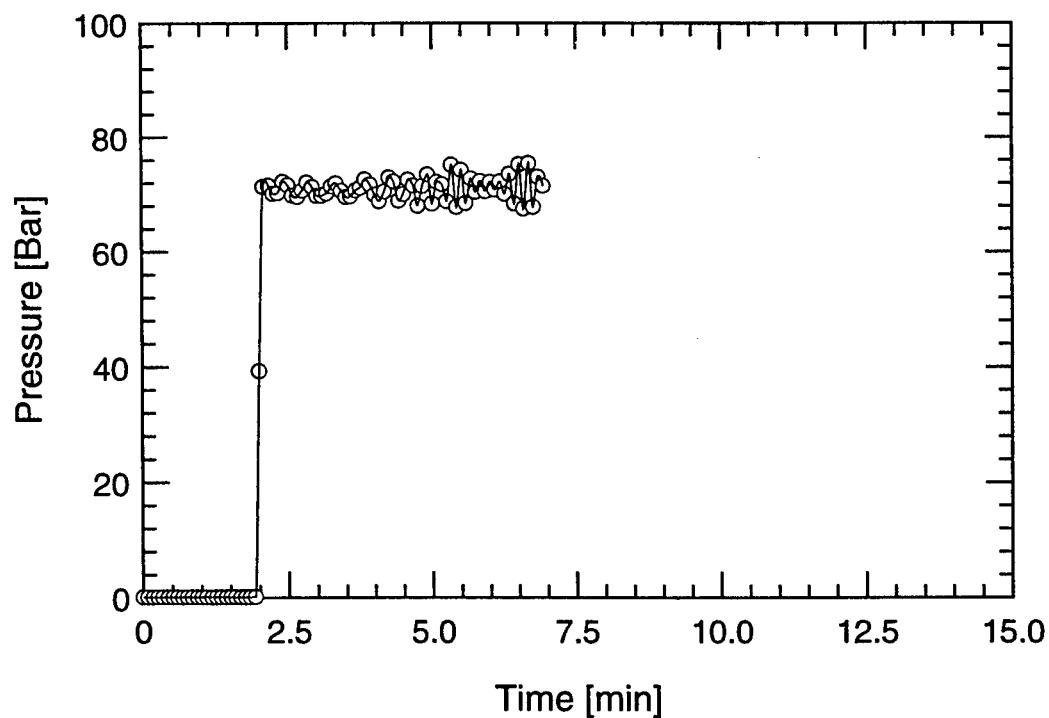


TEST #69

B-416

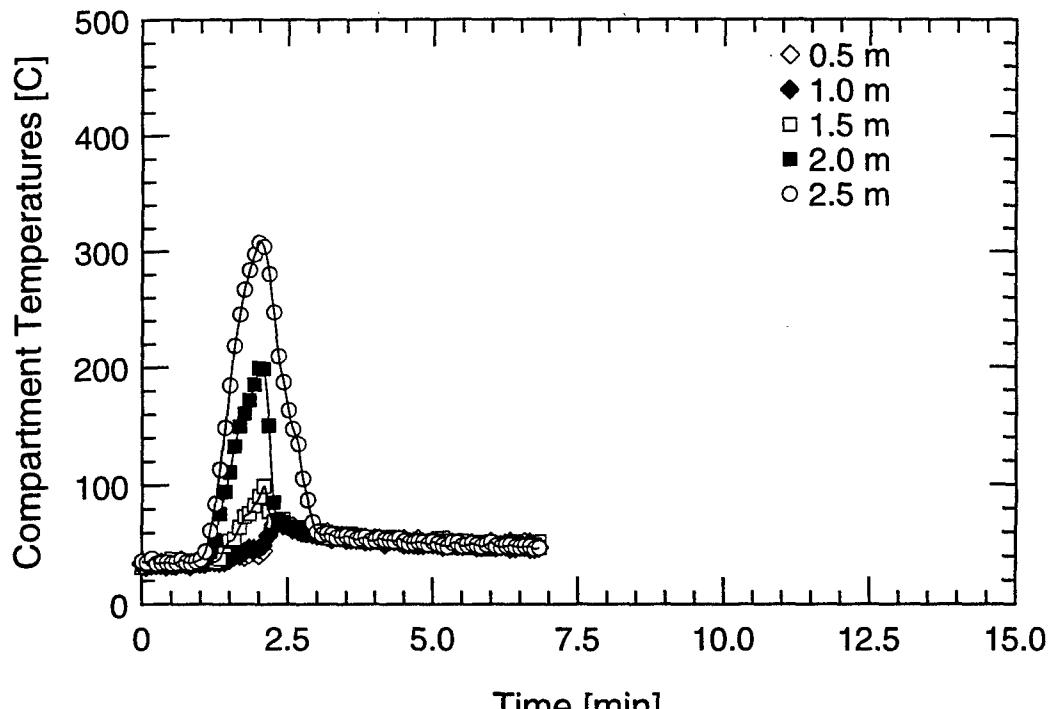


Water Mist System Flow Rate

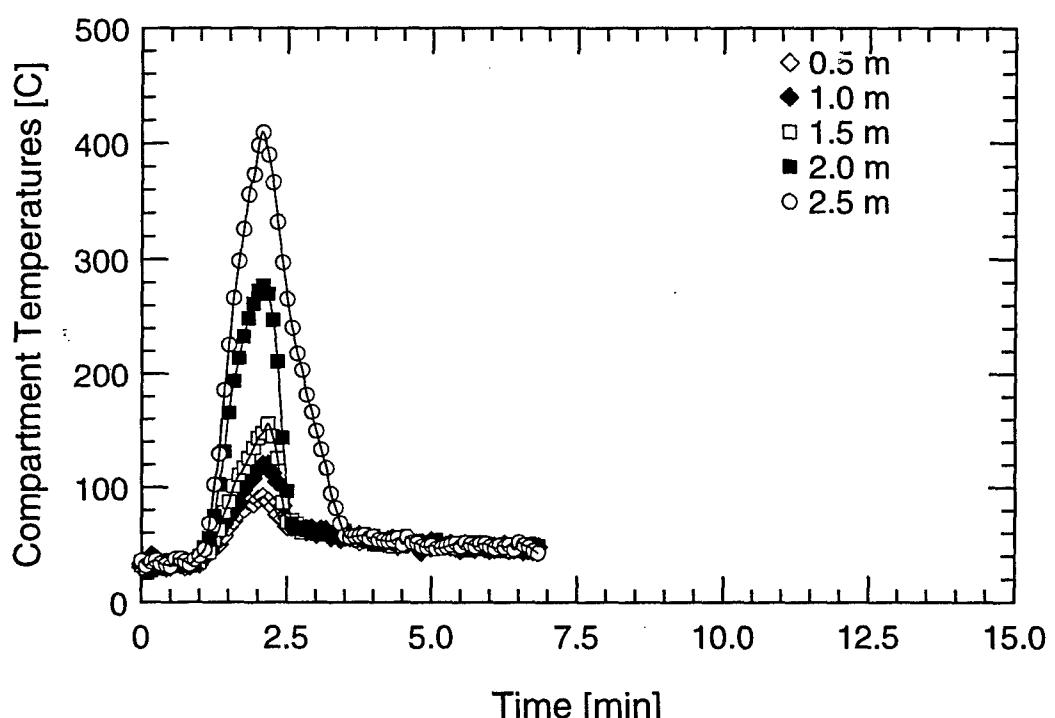


Water Mist System Pressure

TEST #69

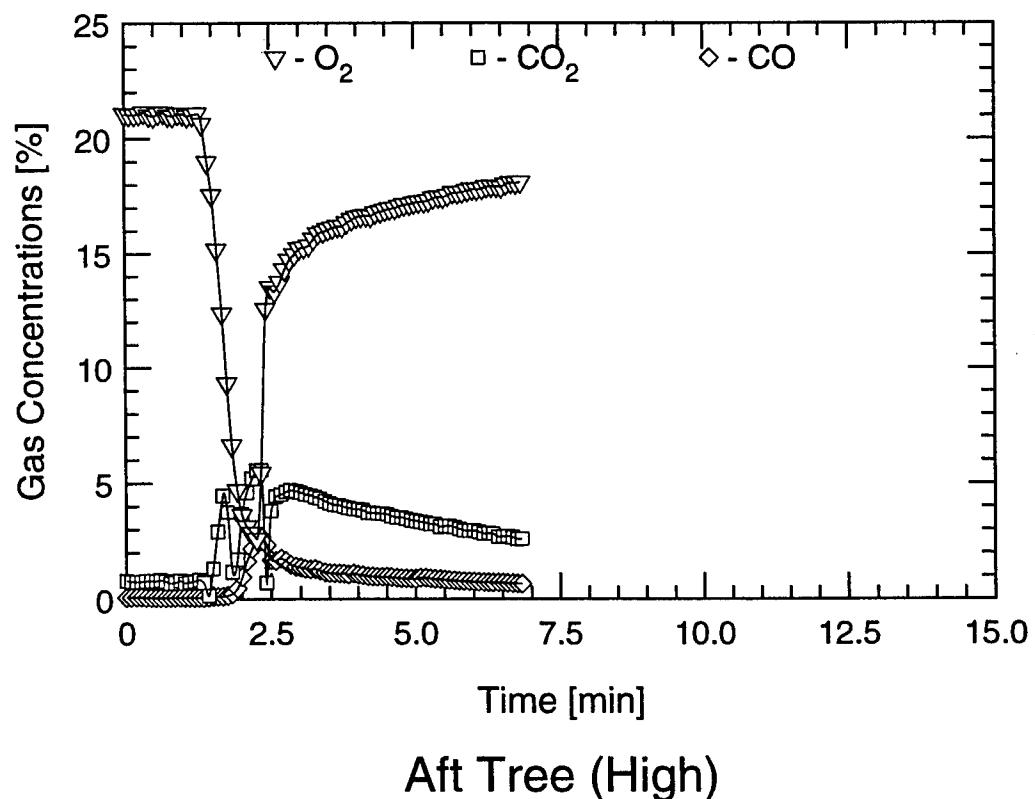
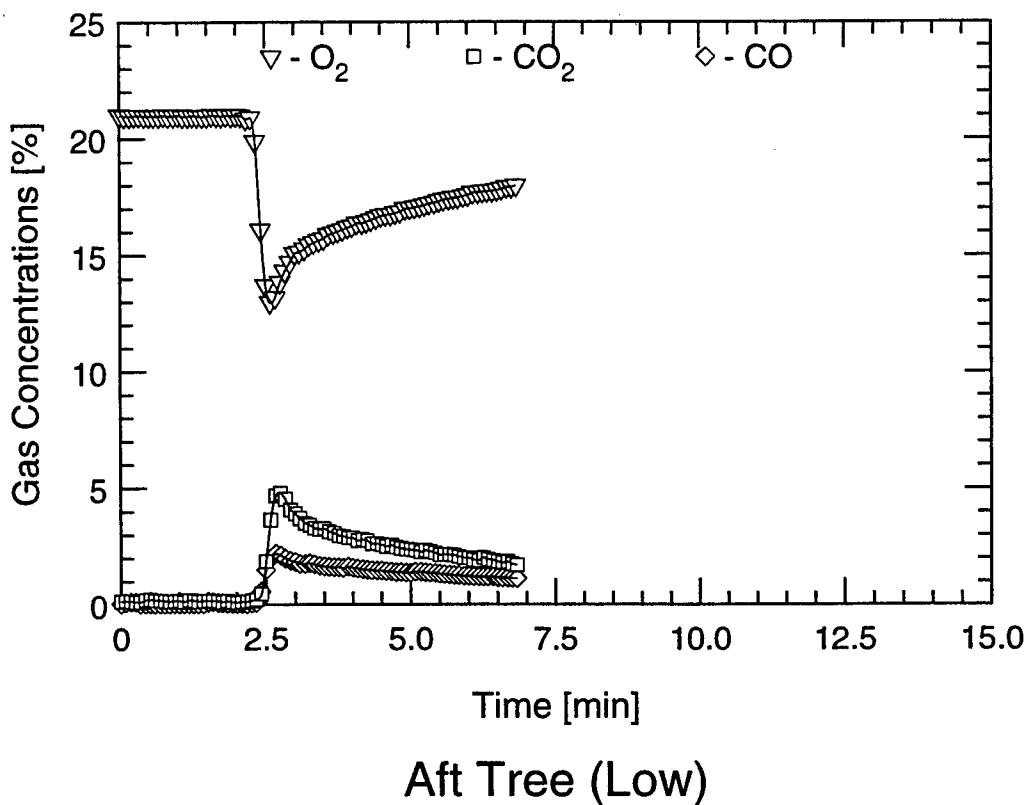


Aft Tree



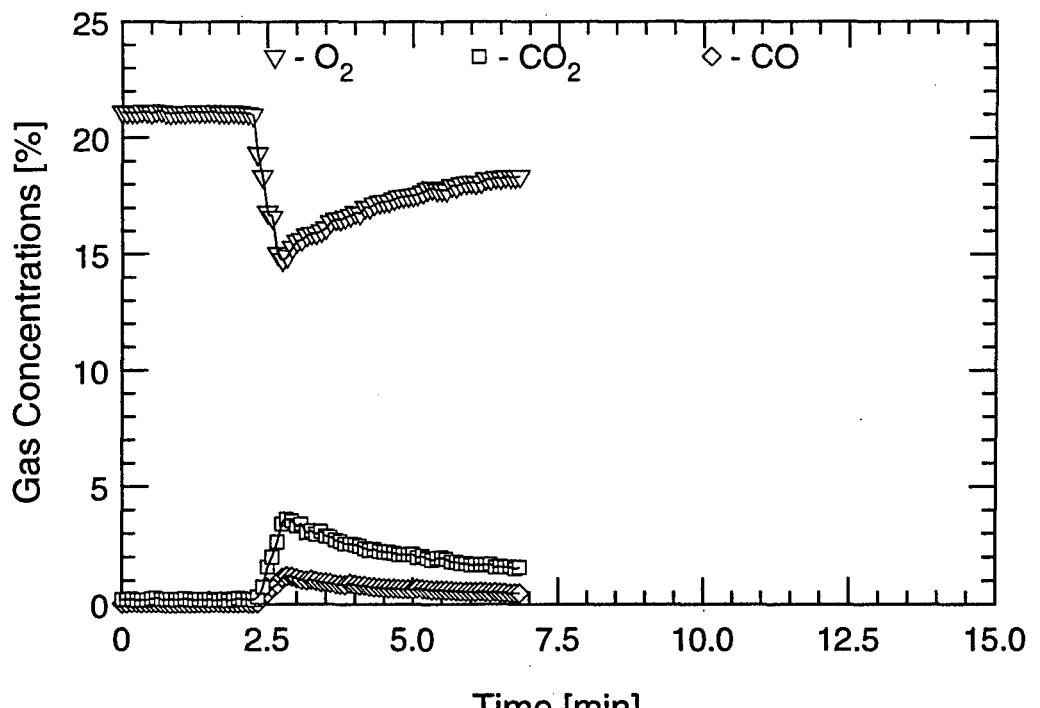
Forward Tree

TEST #70

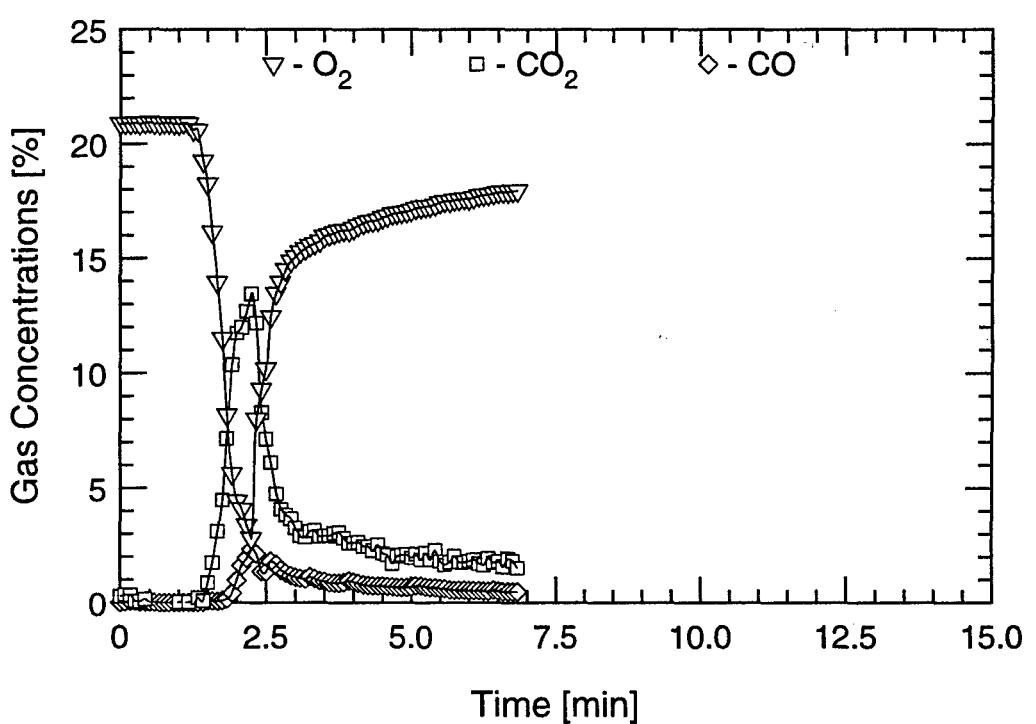


TEST #70

B-419



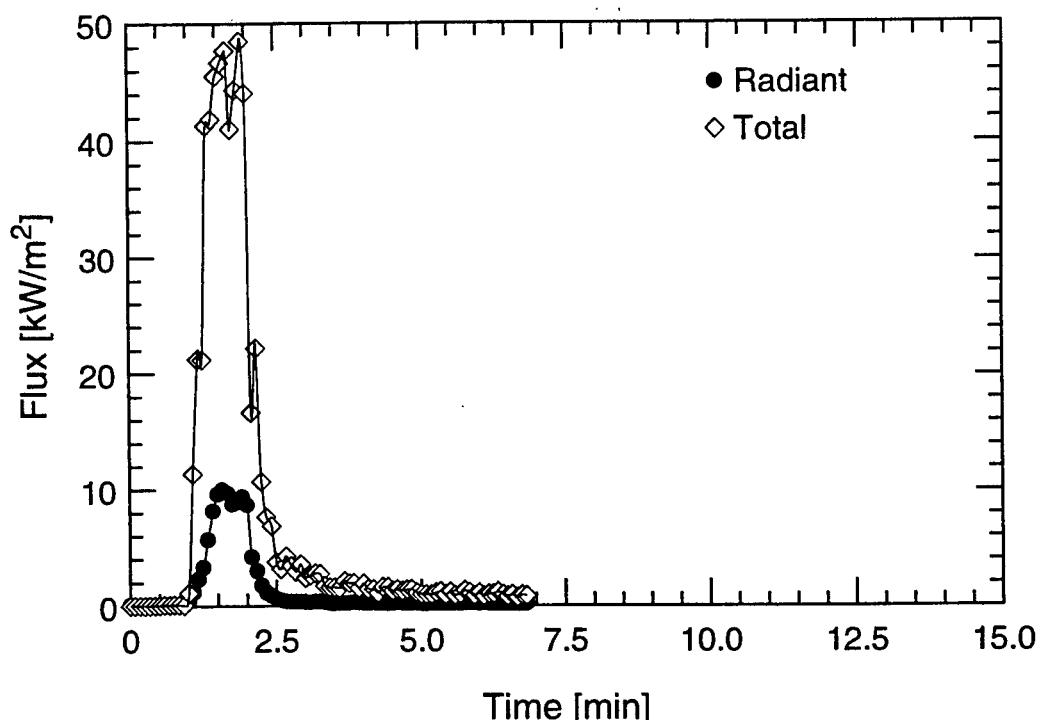
Forward Tree (Low)



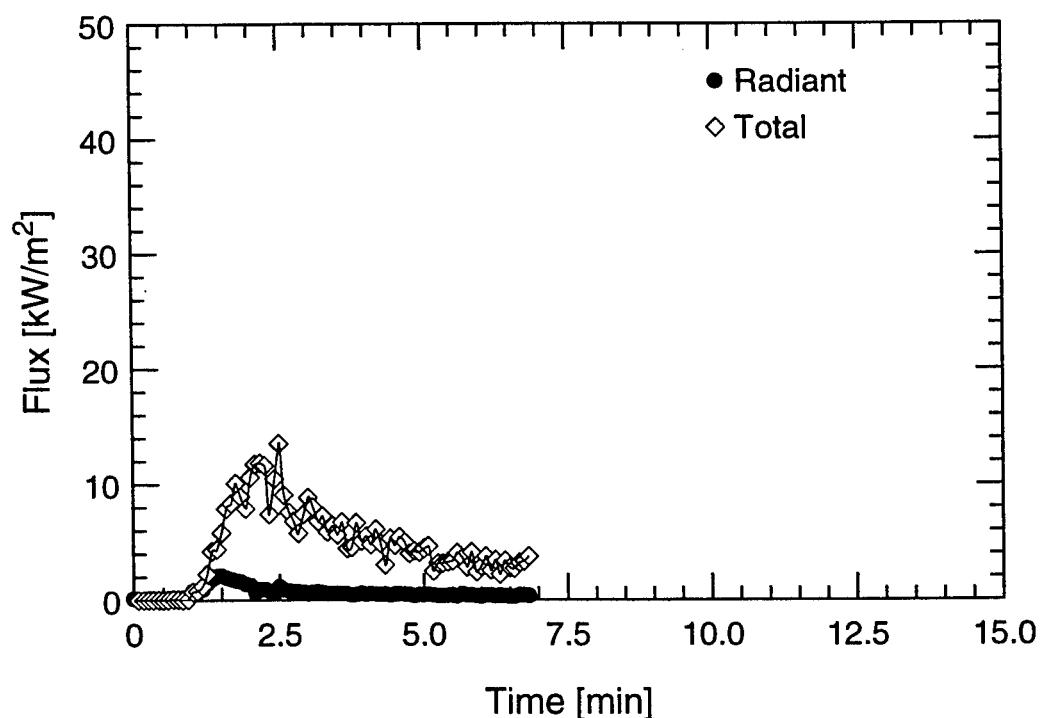
Forward Tree (High)

TEST #70

B-420



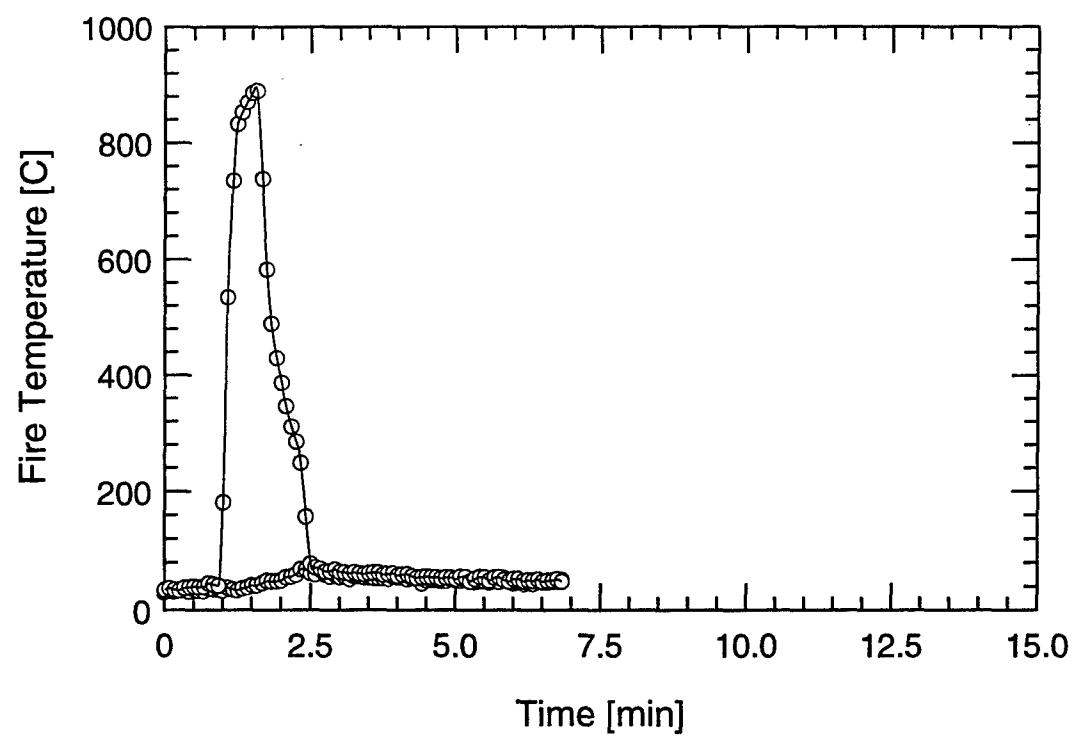
Overhead



Forward Bulkhead

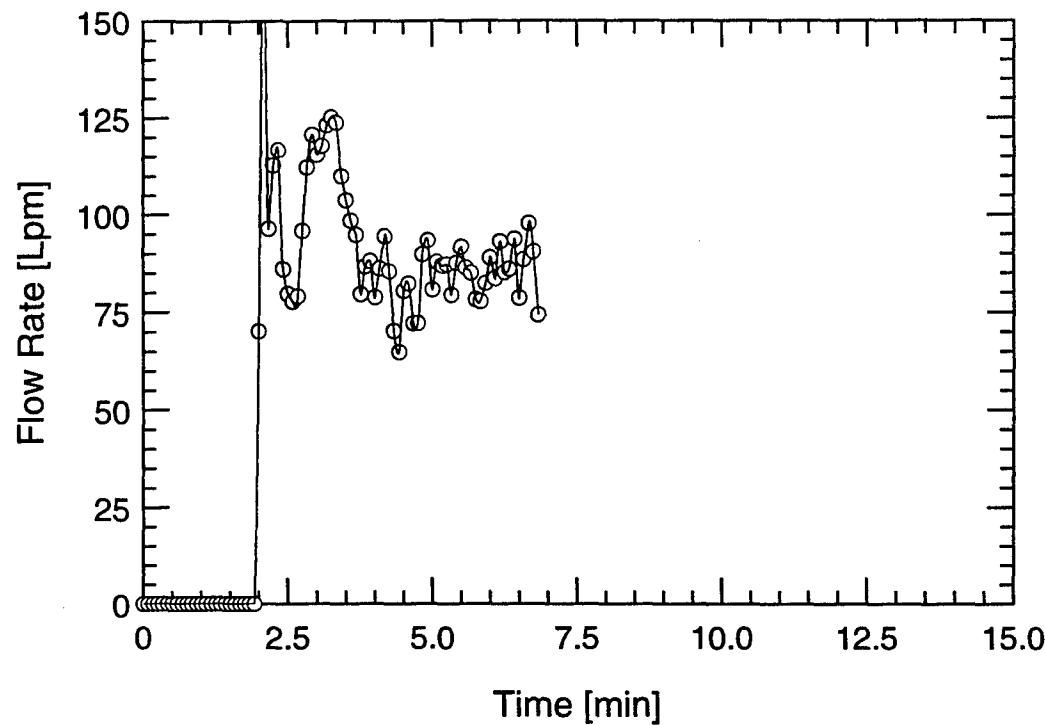
TEST #70

B-421

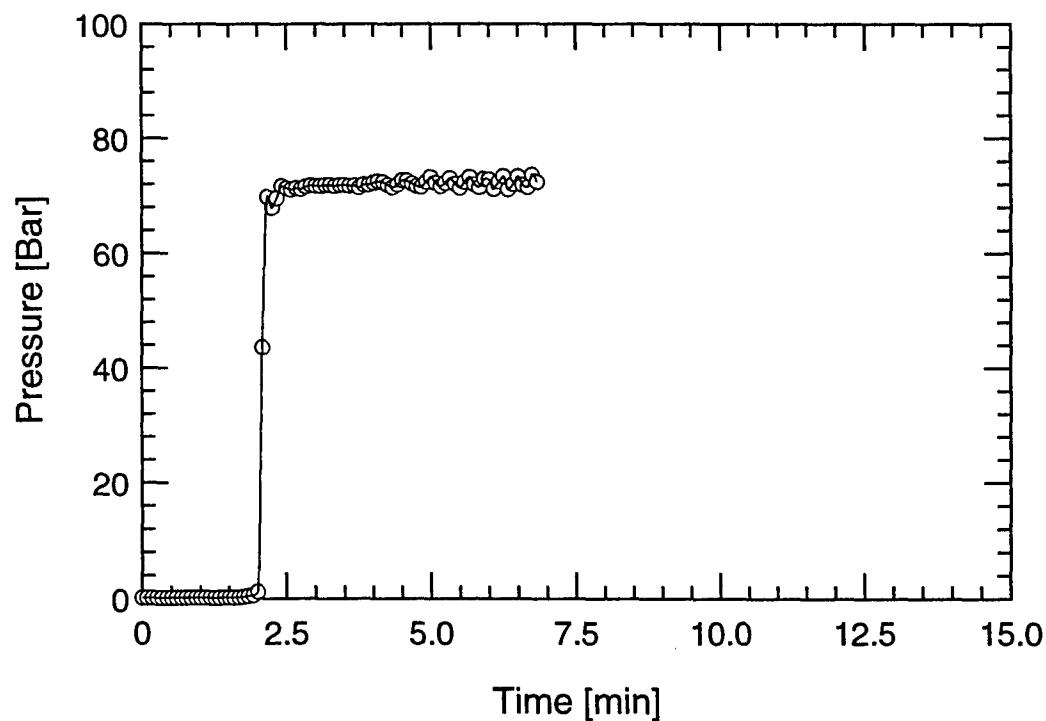


TEST #70

B-422



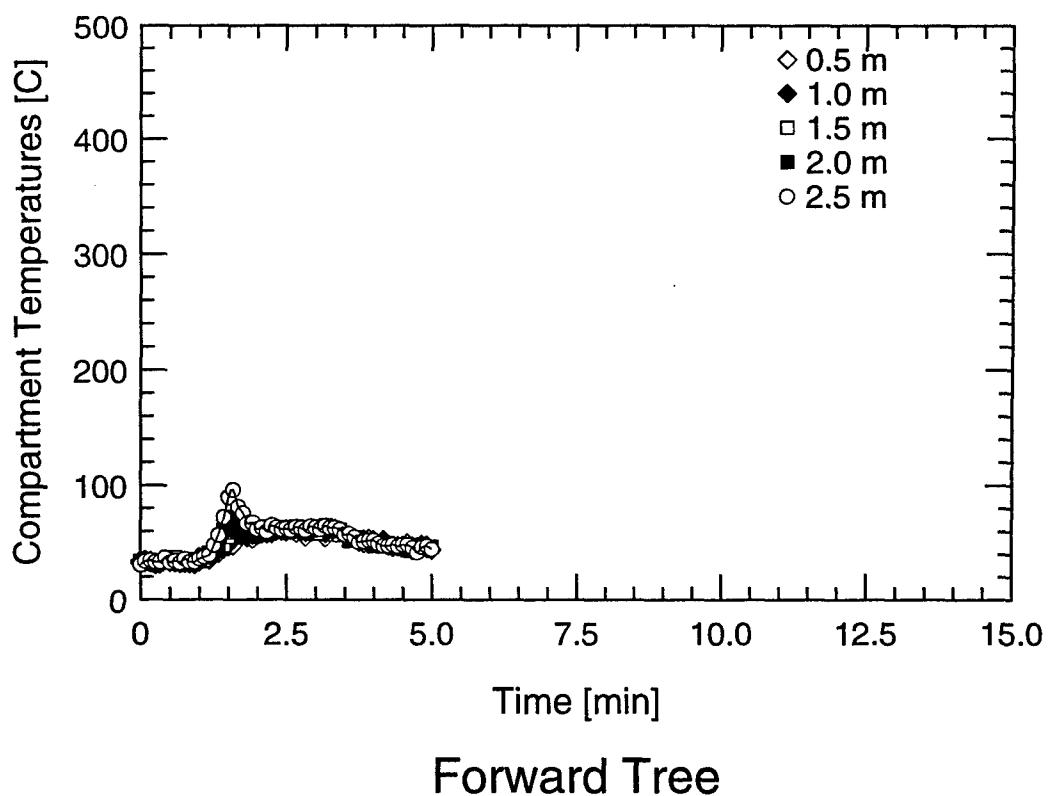
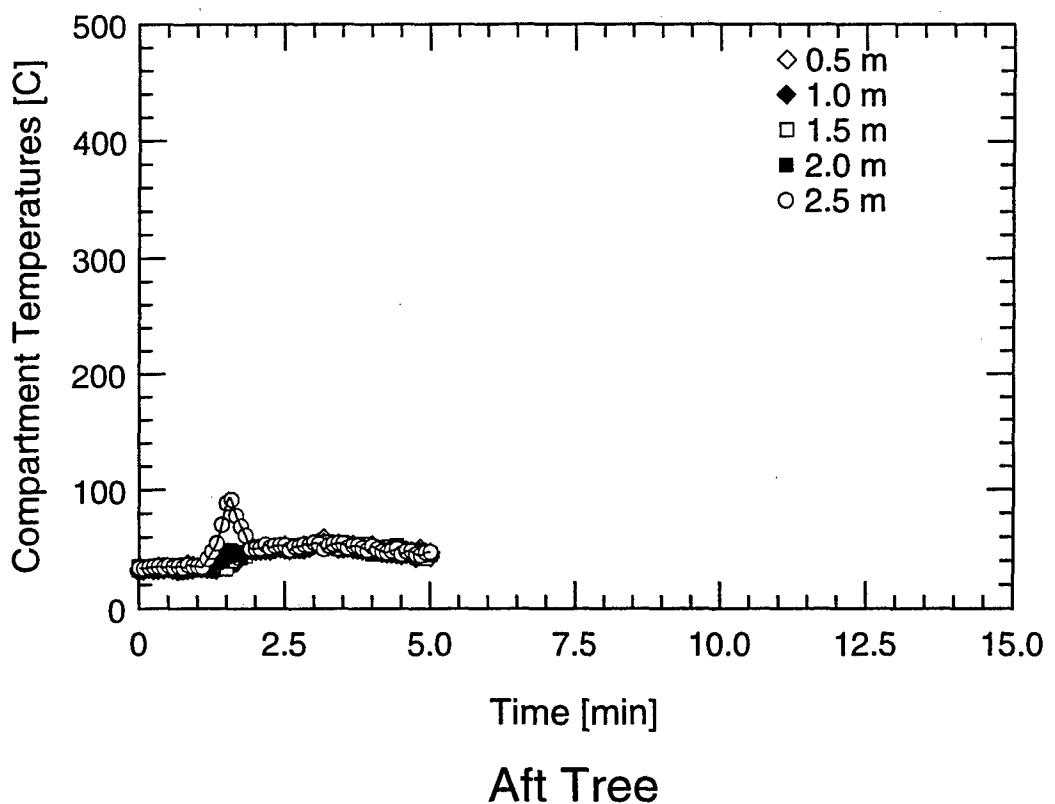
Water Mist System Flow Rate



Water Mist System Pressure

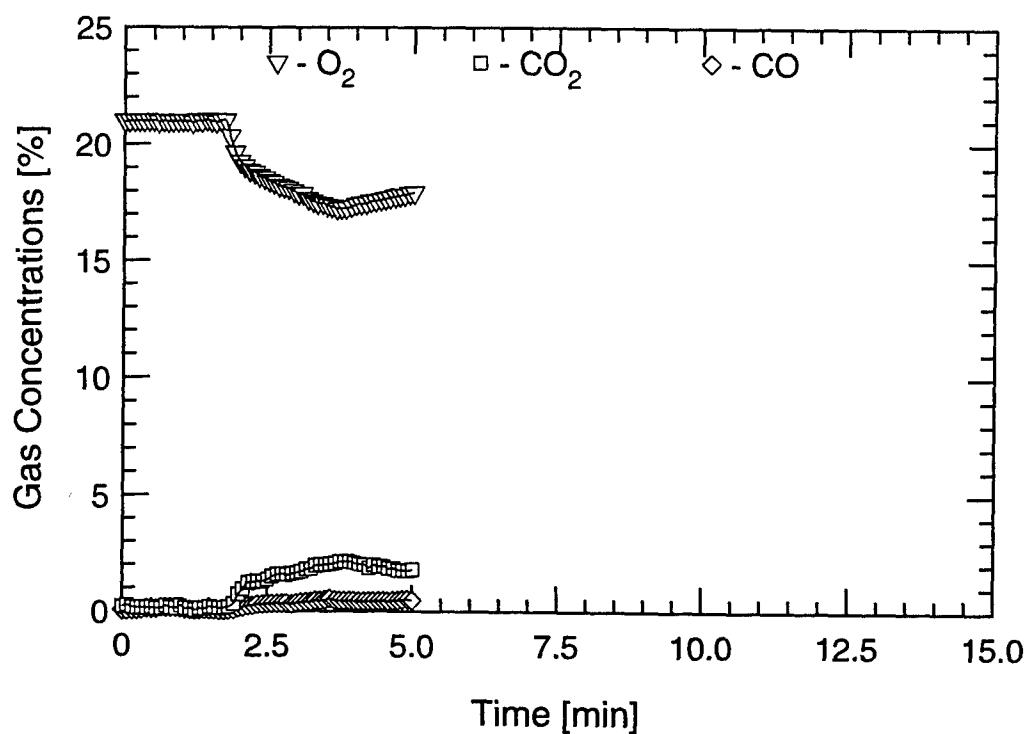
TEST #70

B-423

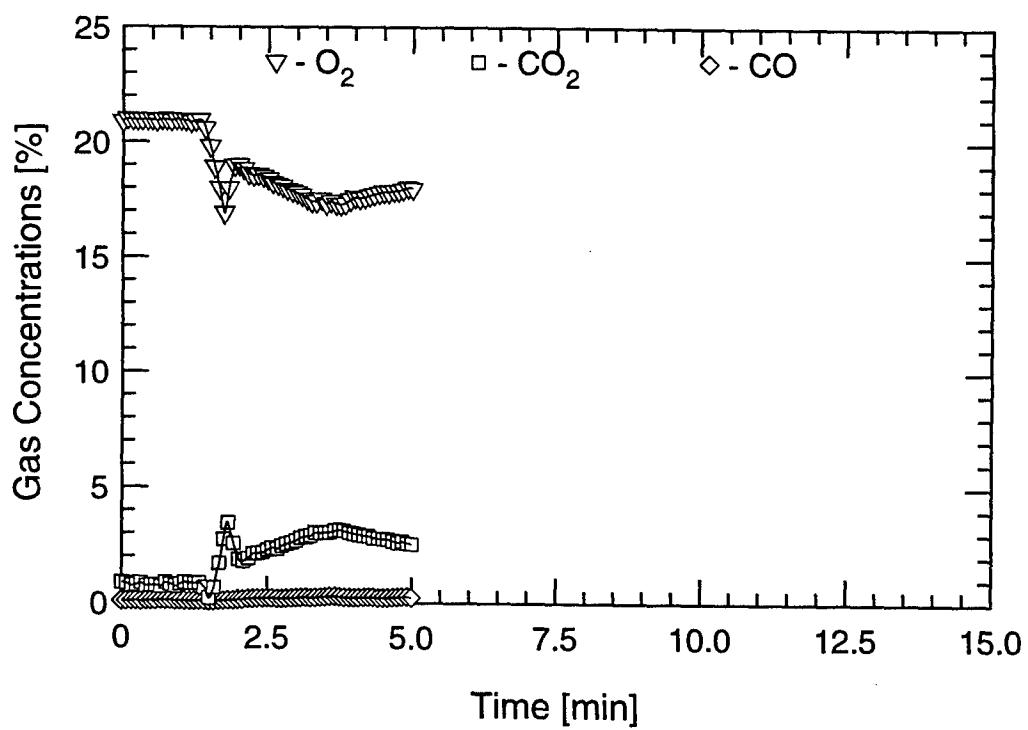


TEST #71

B-424



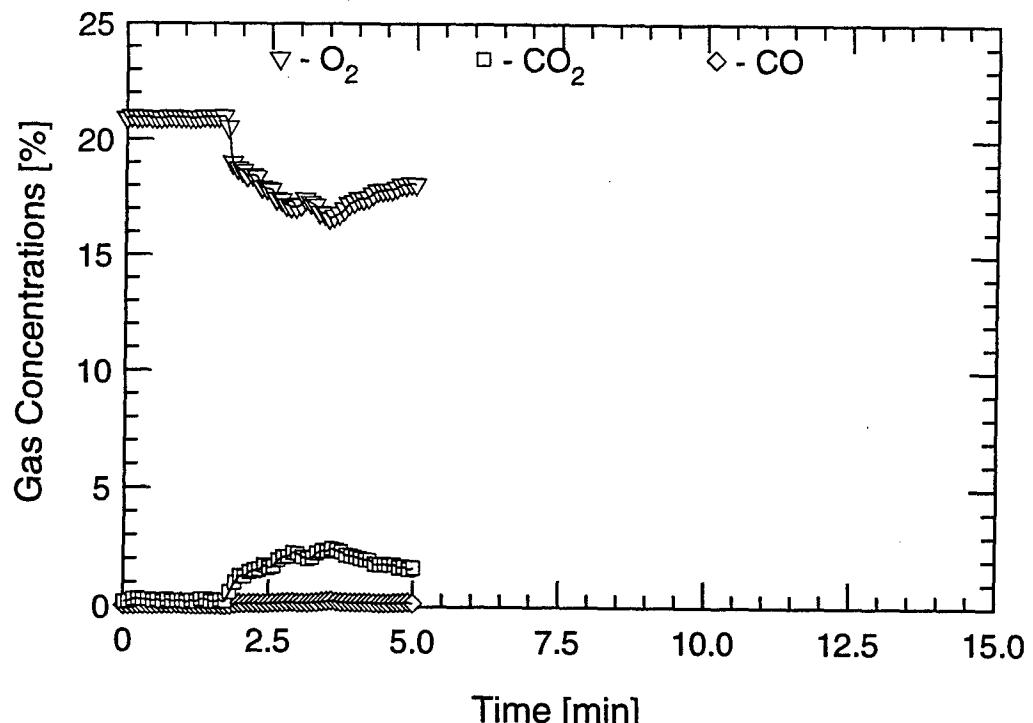
Aft Tree (Low)



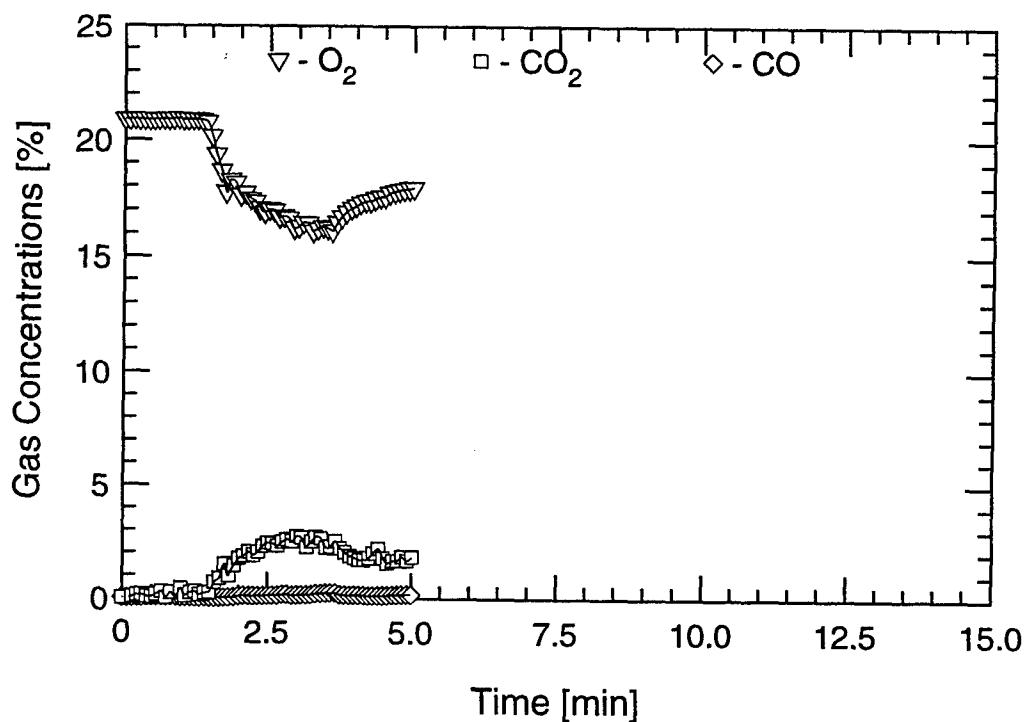
Aft Tree (High)

TEST #71

B-425



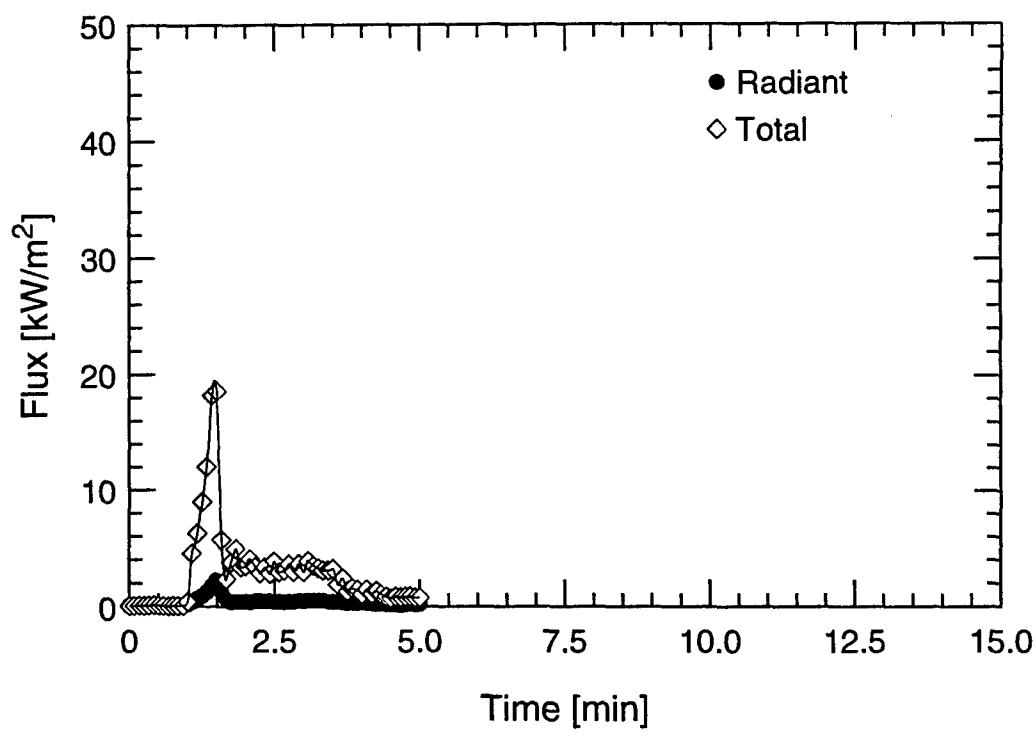
Forward Tree (Low)



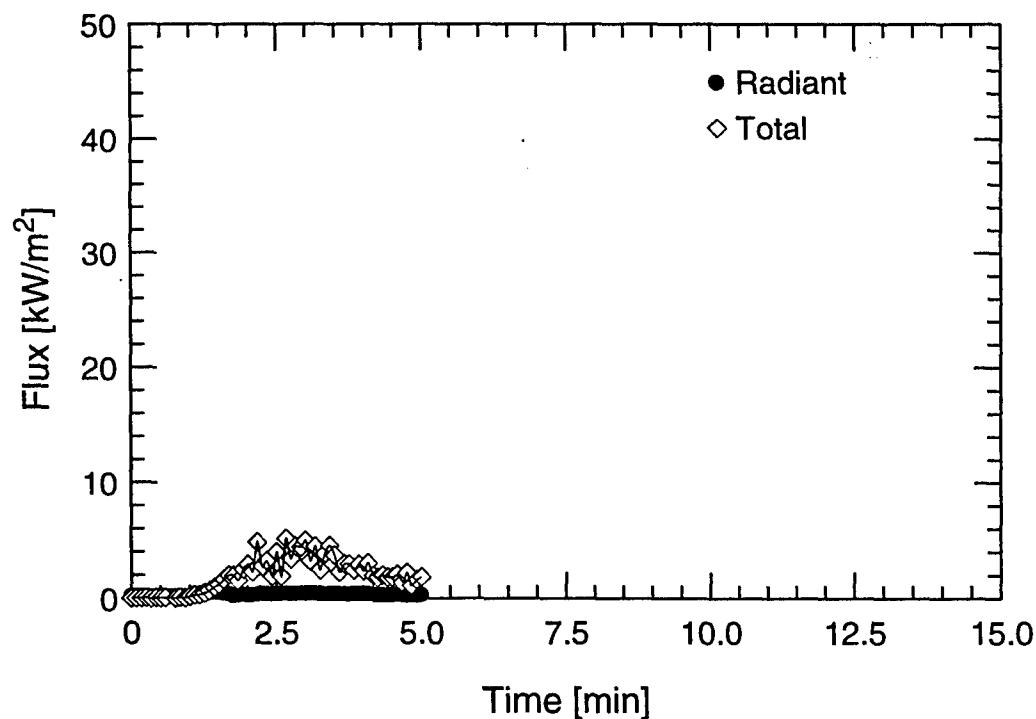
Forward Tree (High)

TEST #71

B-426

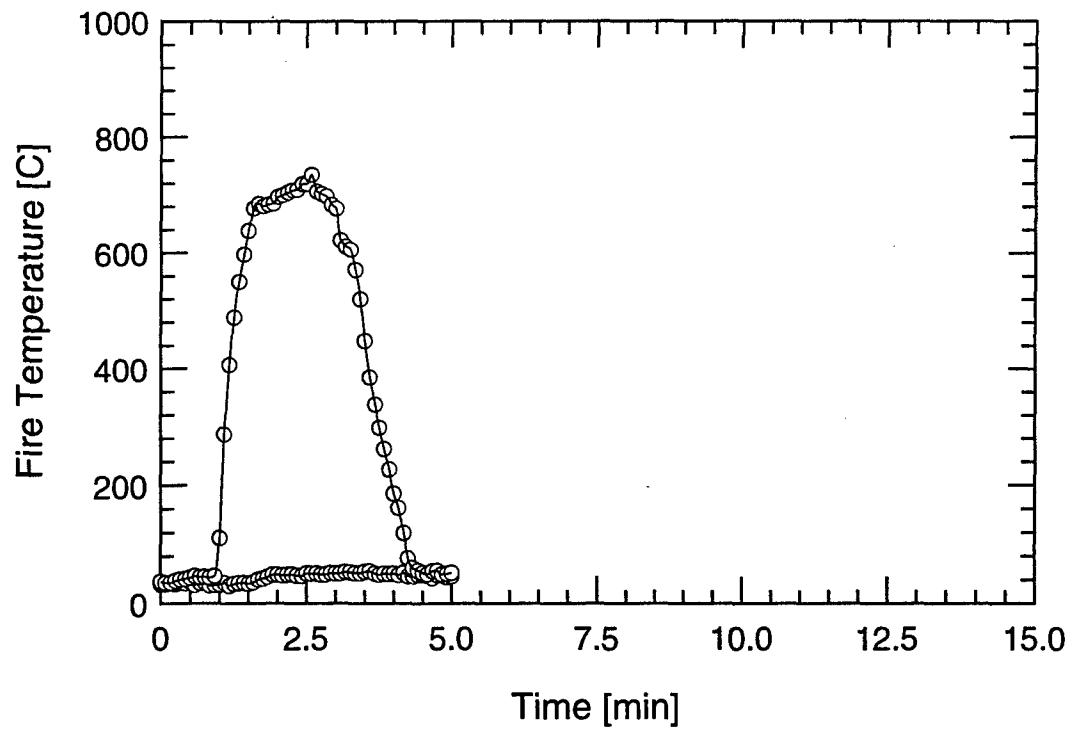


Overhead



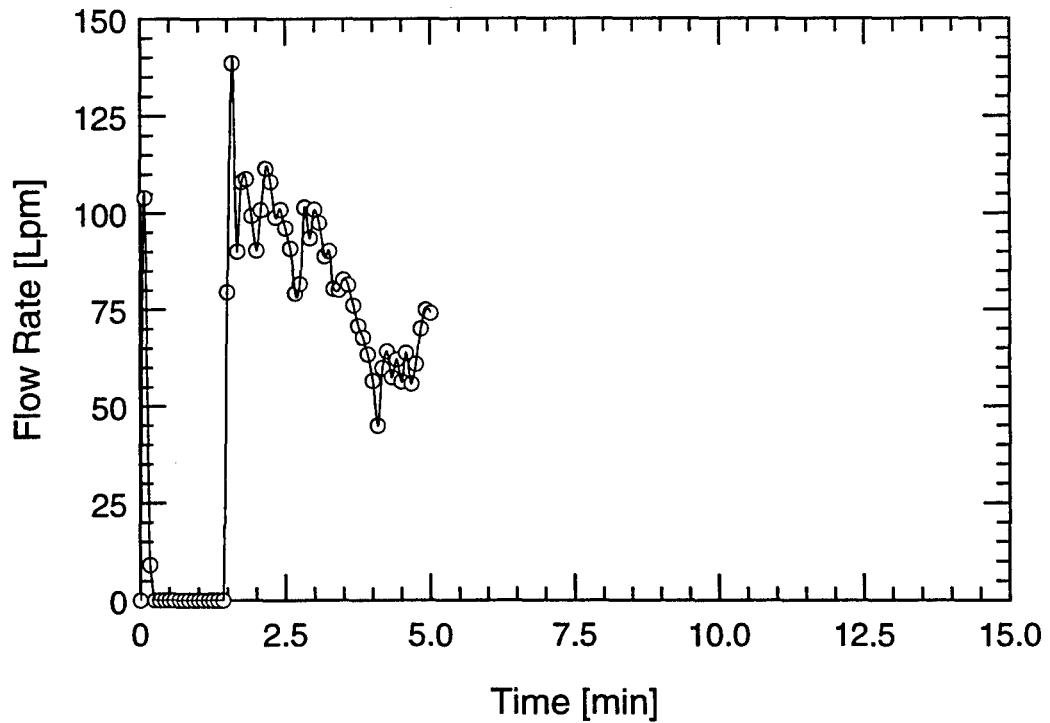
Forward Bulkhead

TEST #71

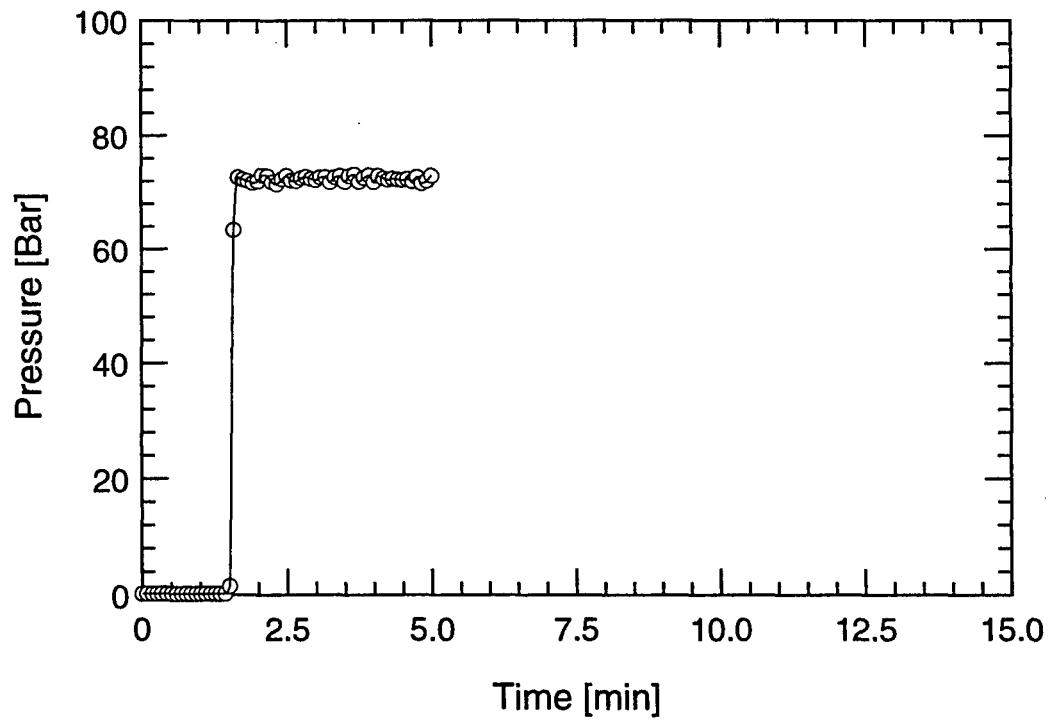


TEST #71

B-428



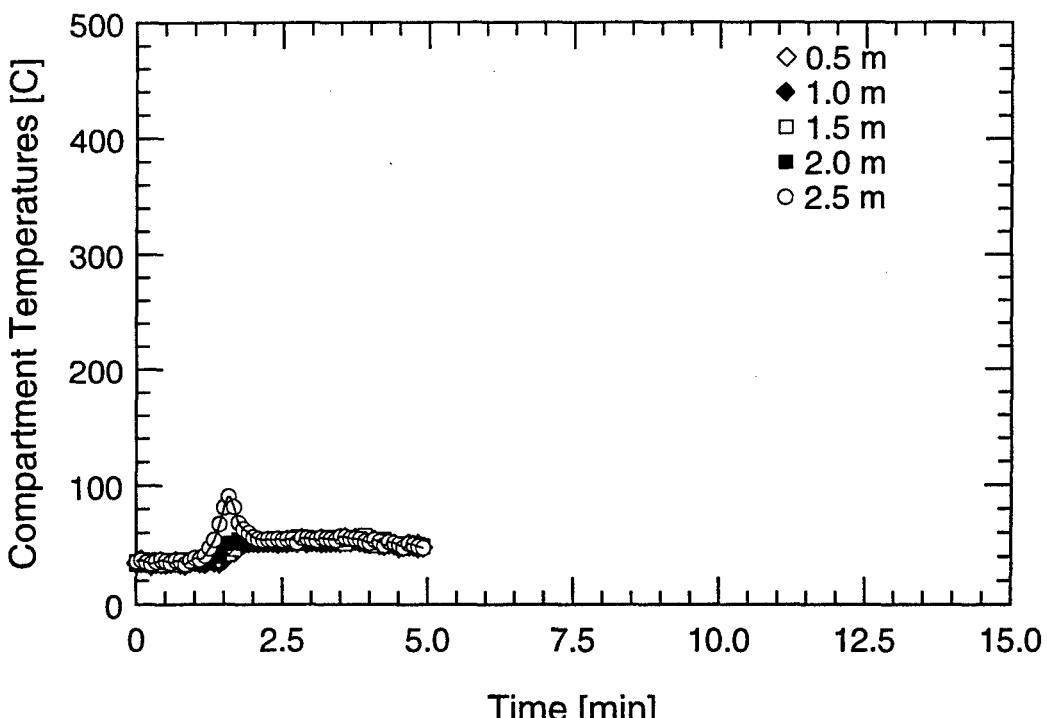
Water Mist System Flow Rate



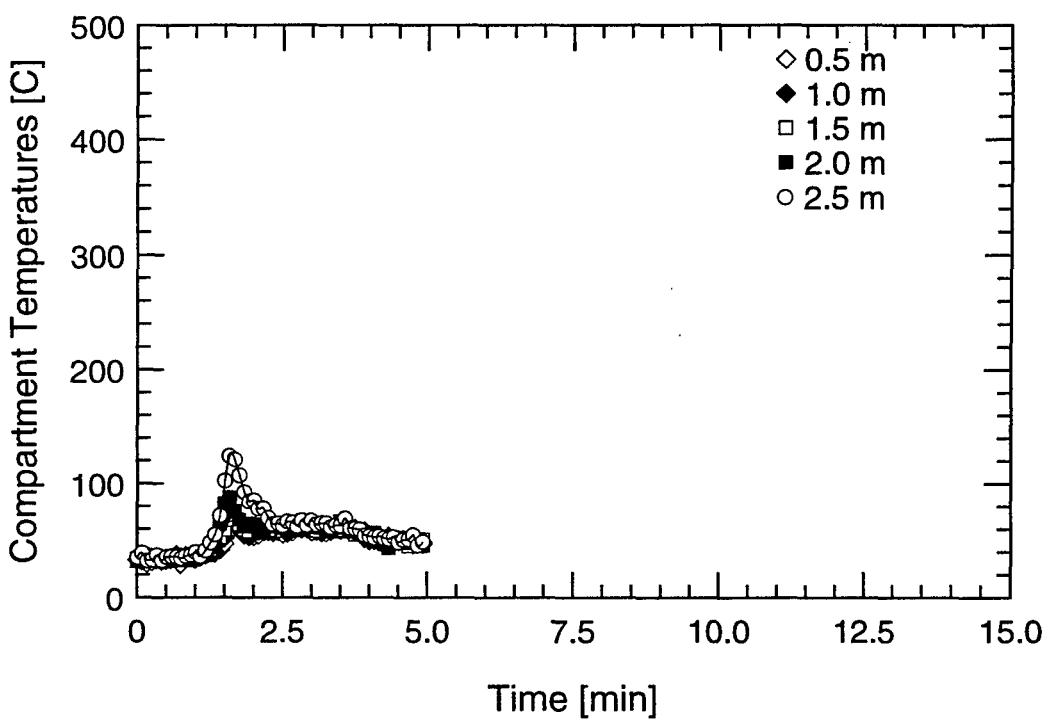
Water Mist System Pressure

TEST #71

B-429



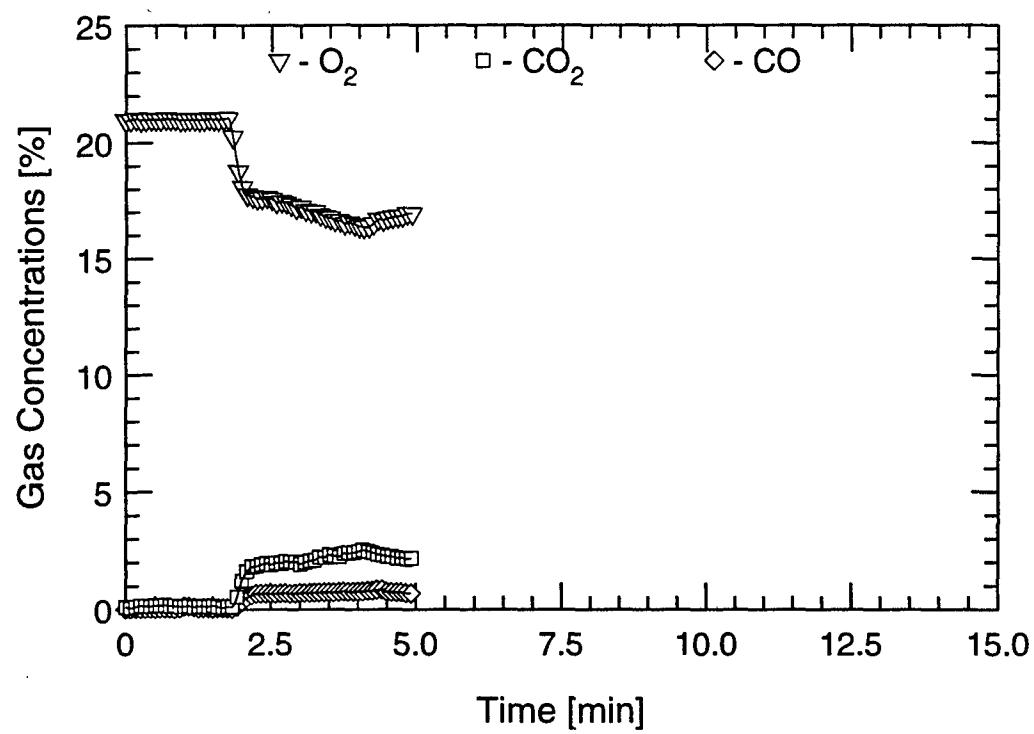
Aft Tree



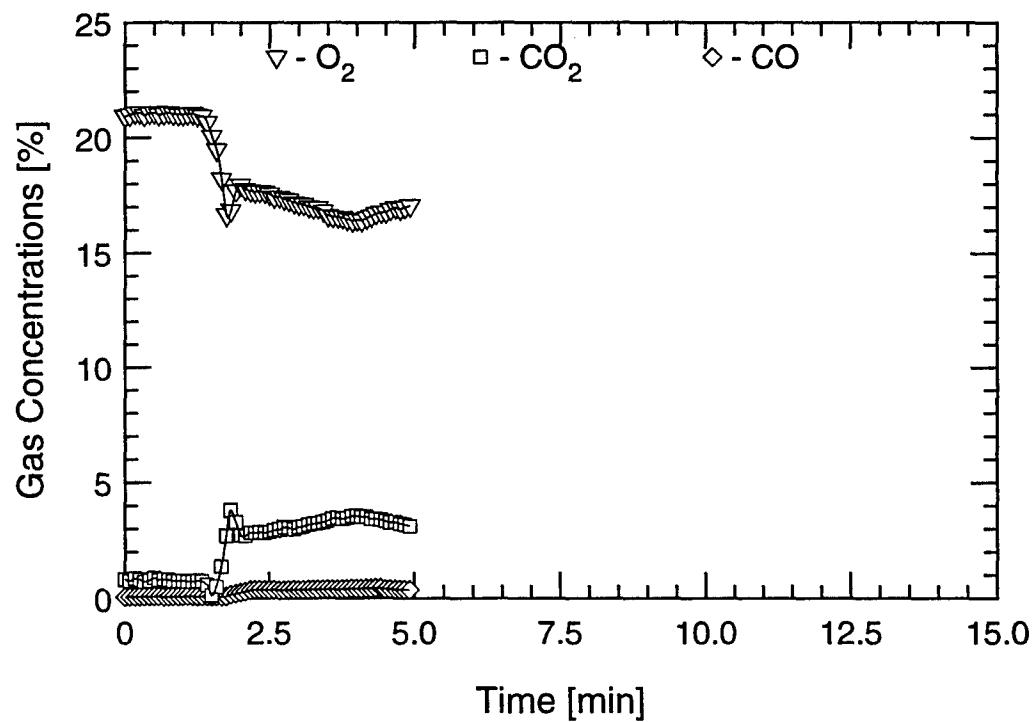
Forward Tree

TEST #72

B-430



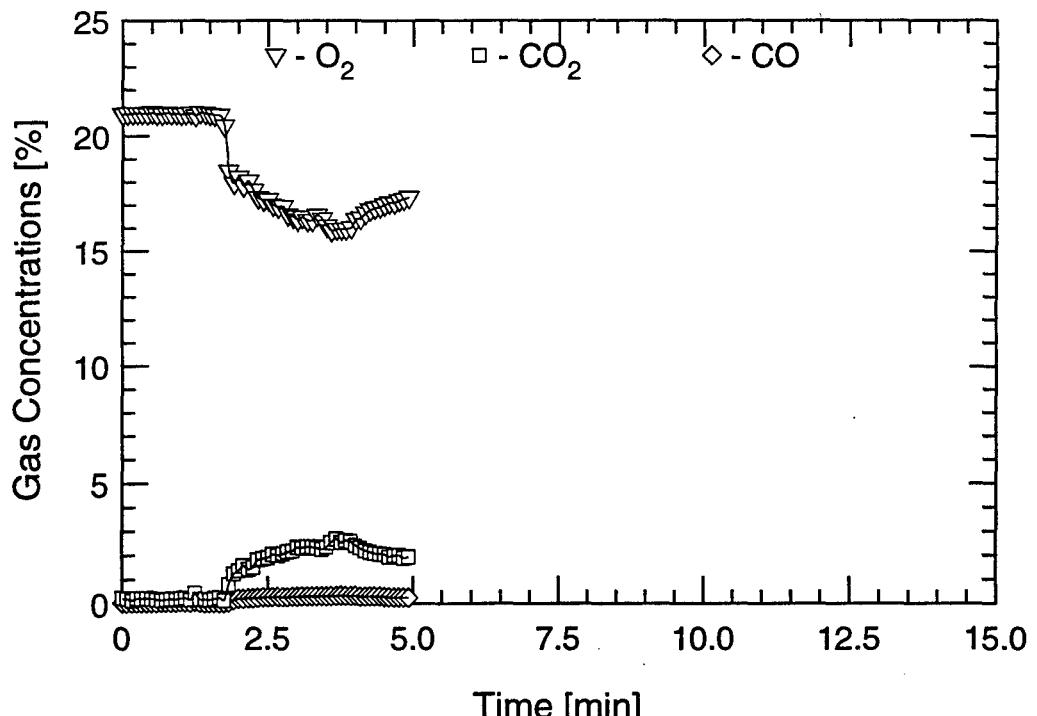
Aft Tree (Low)



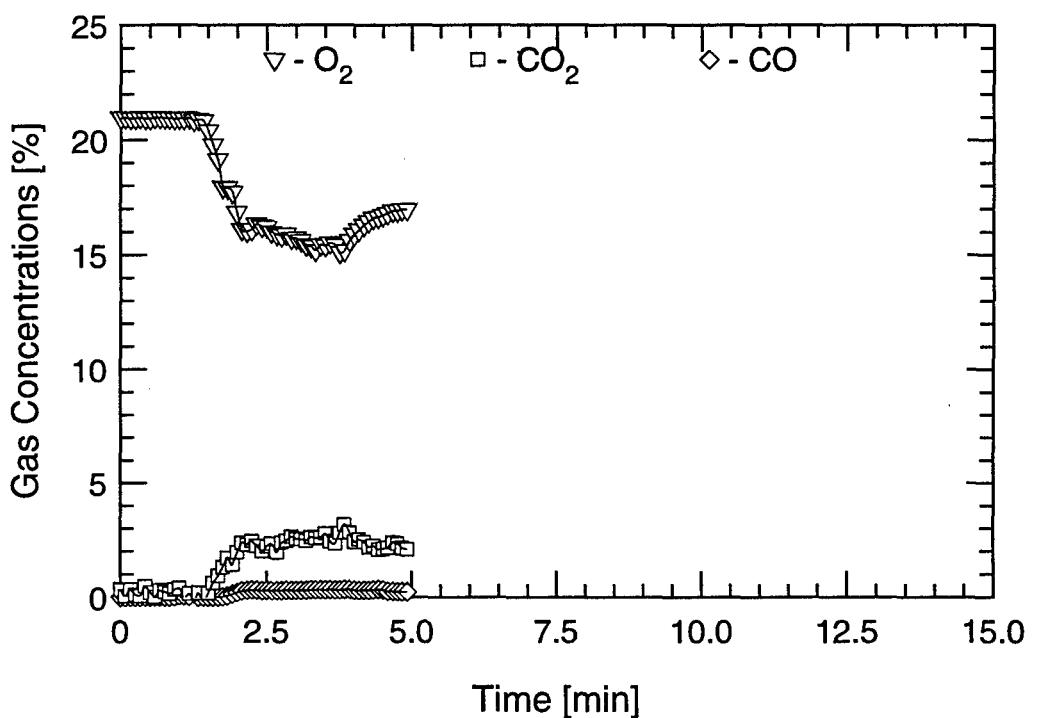
Aft Tree (High)

TEST #72

B-431



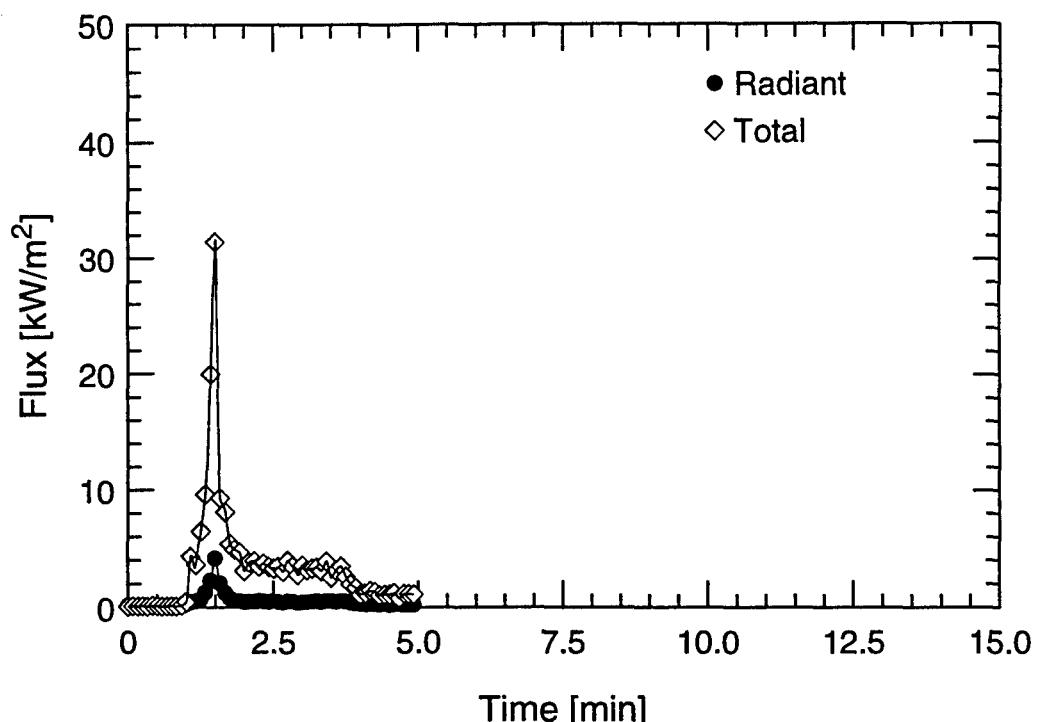
Forward Tree (Low)



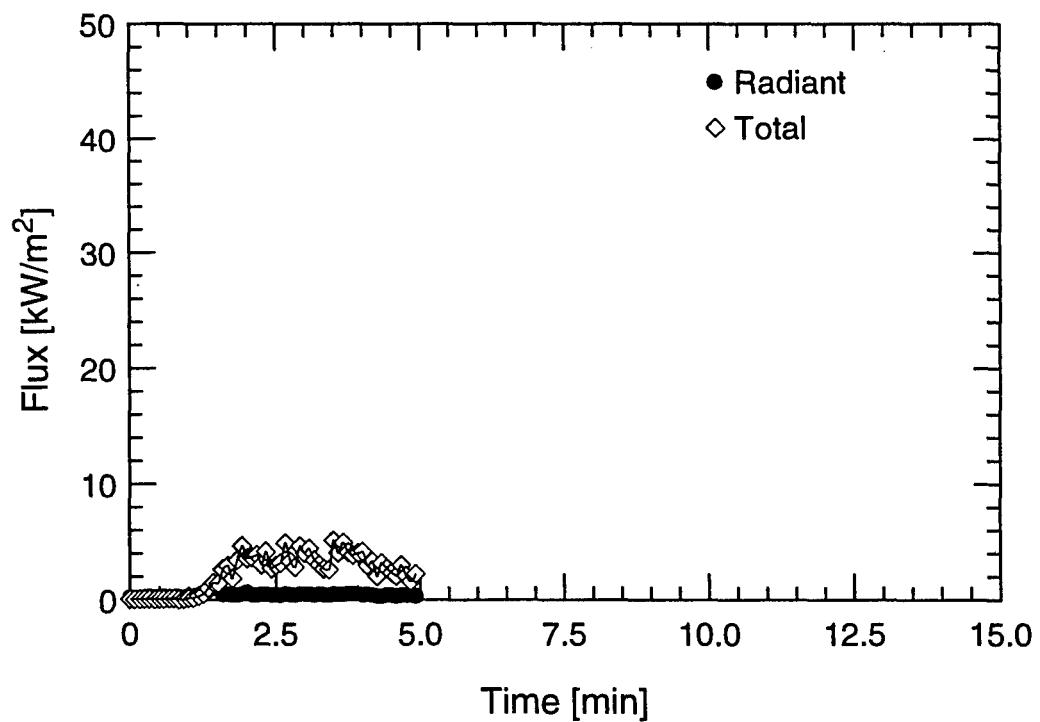
Forward Tree (High)

TEST #72

B-432



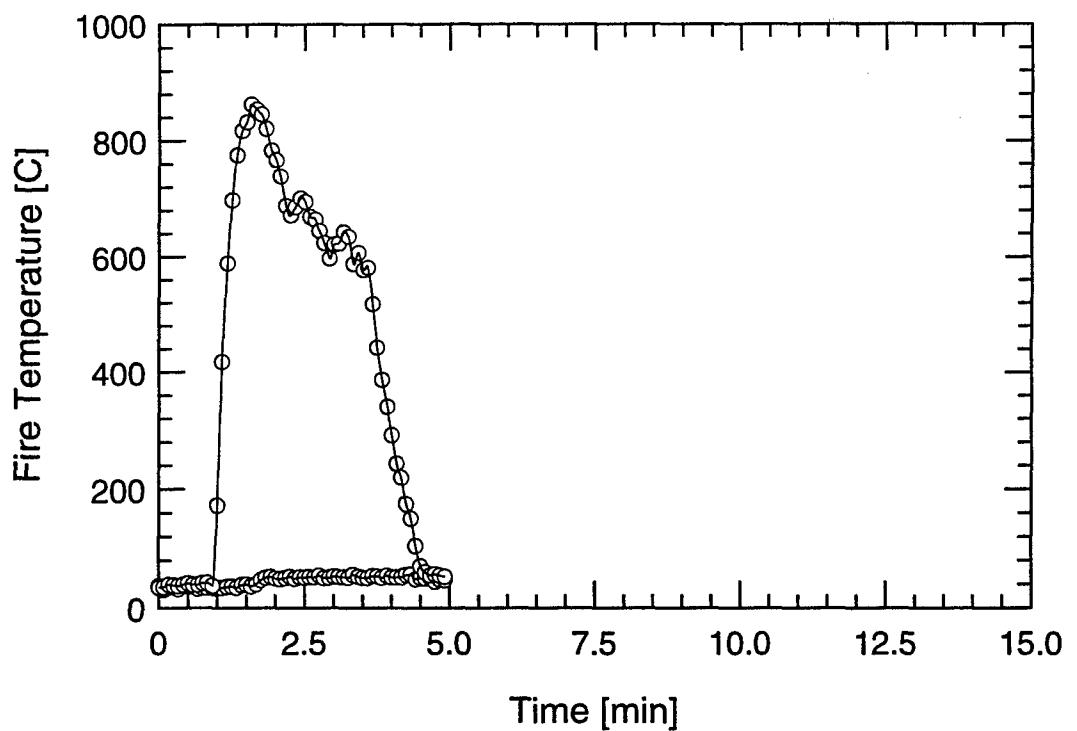
Overhead



Forward Bulkhead

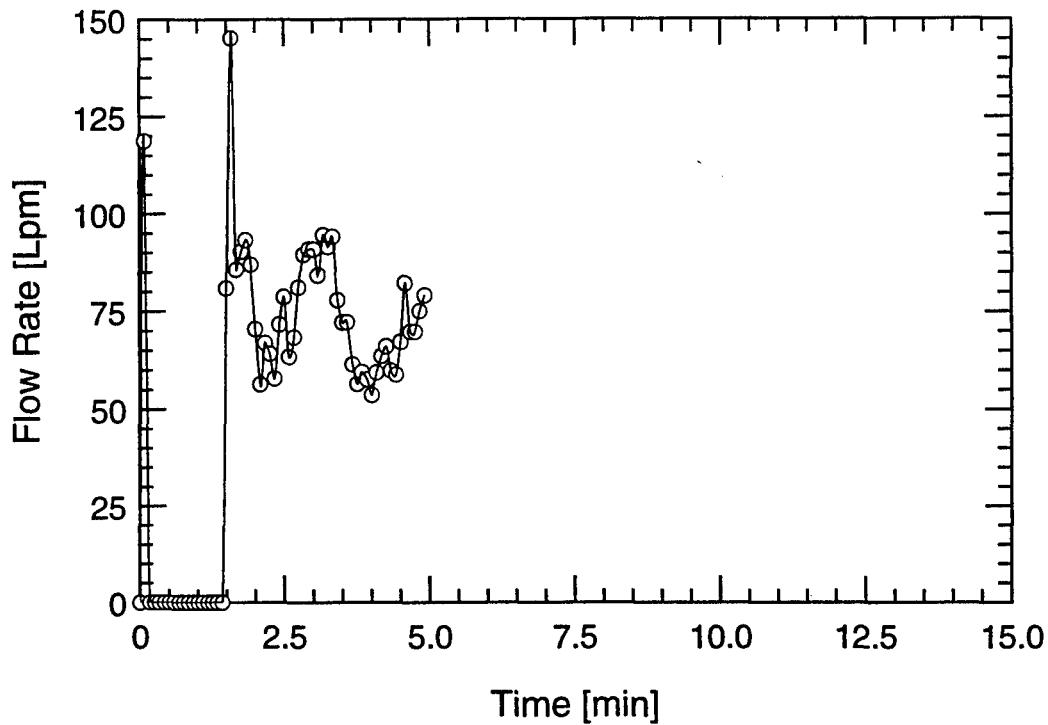
TEST #72

B-433

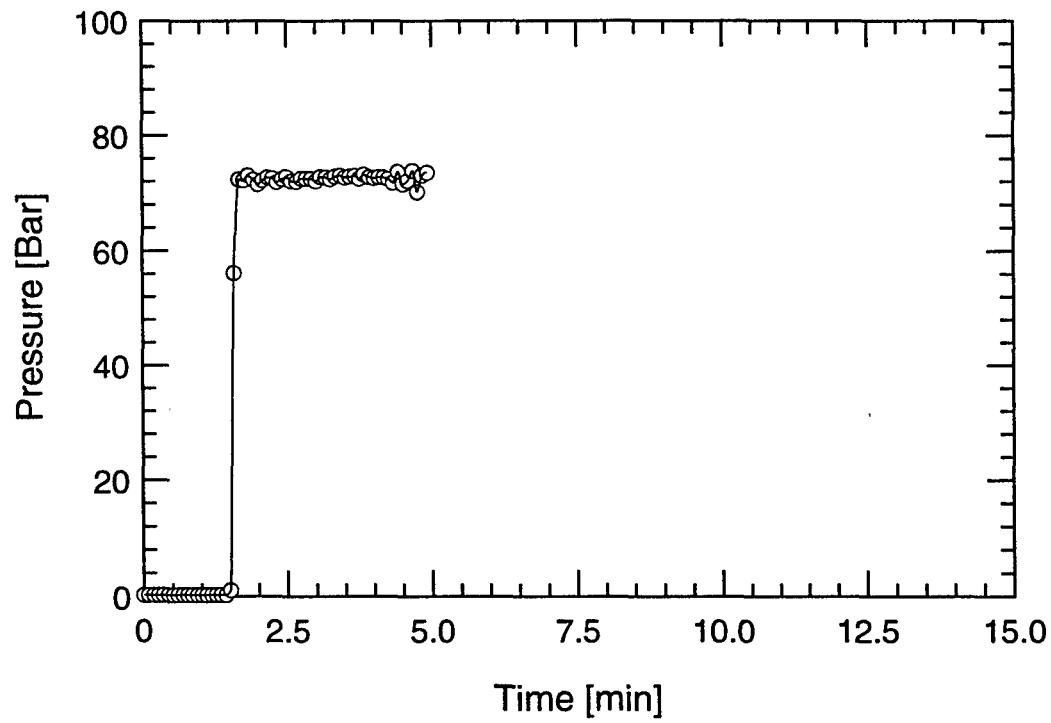


TEST #72

B-434



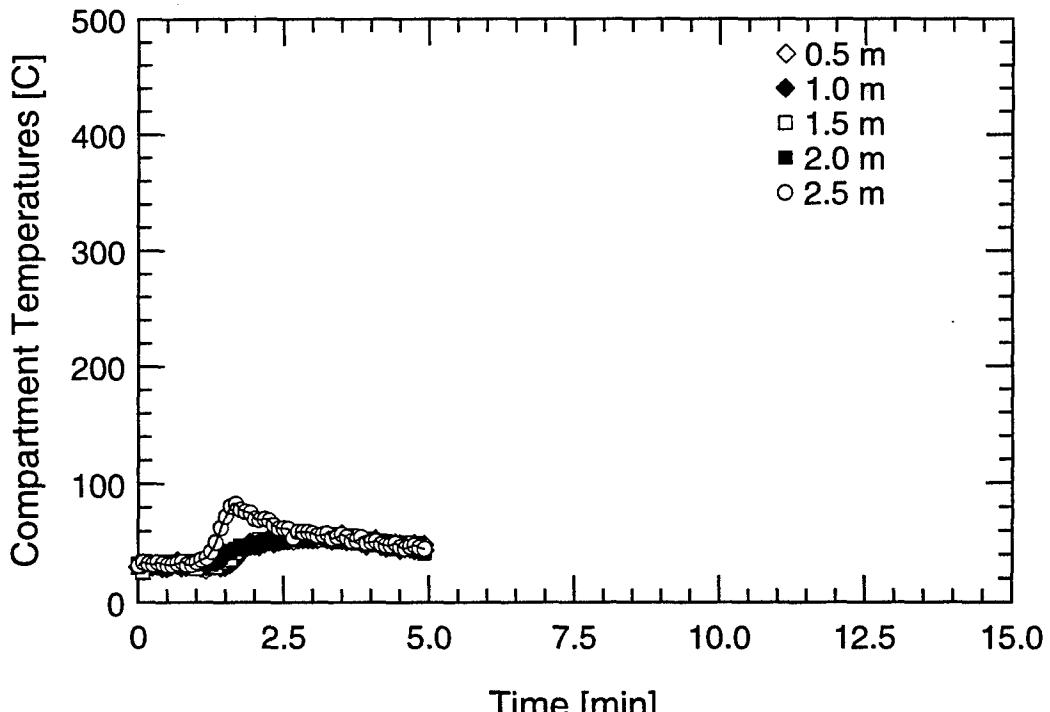
Water Mist System Flow Rate



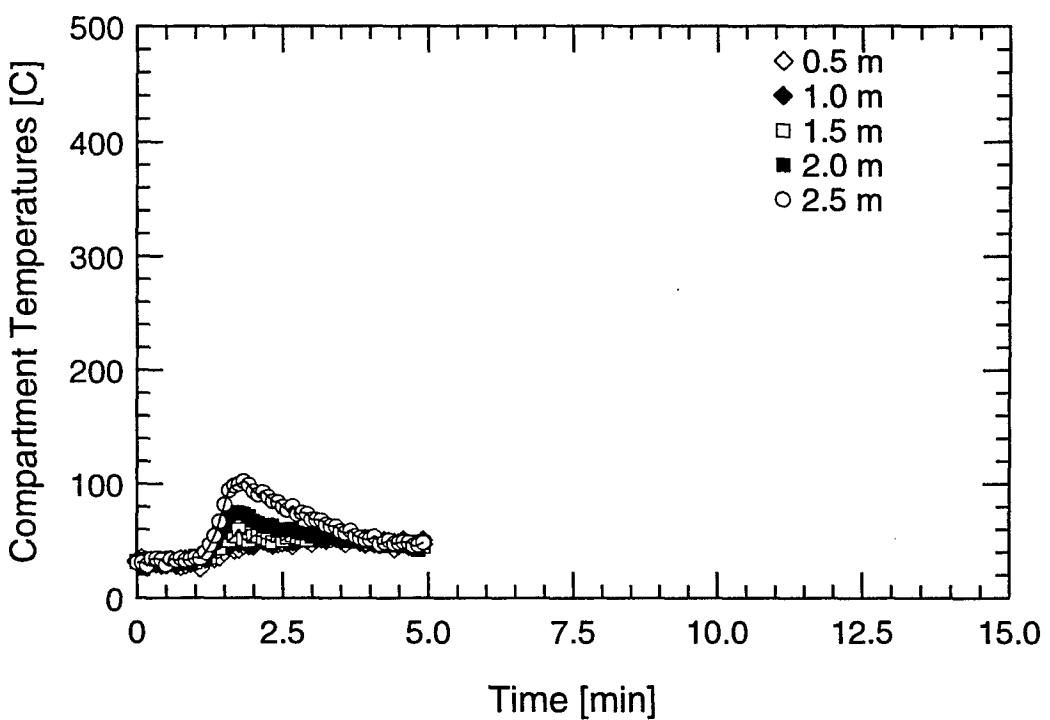
Water Mist System Pressure

TEST #72

B-435

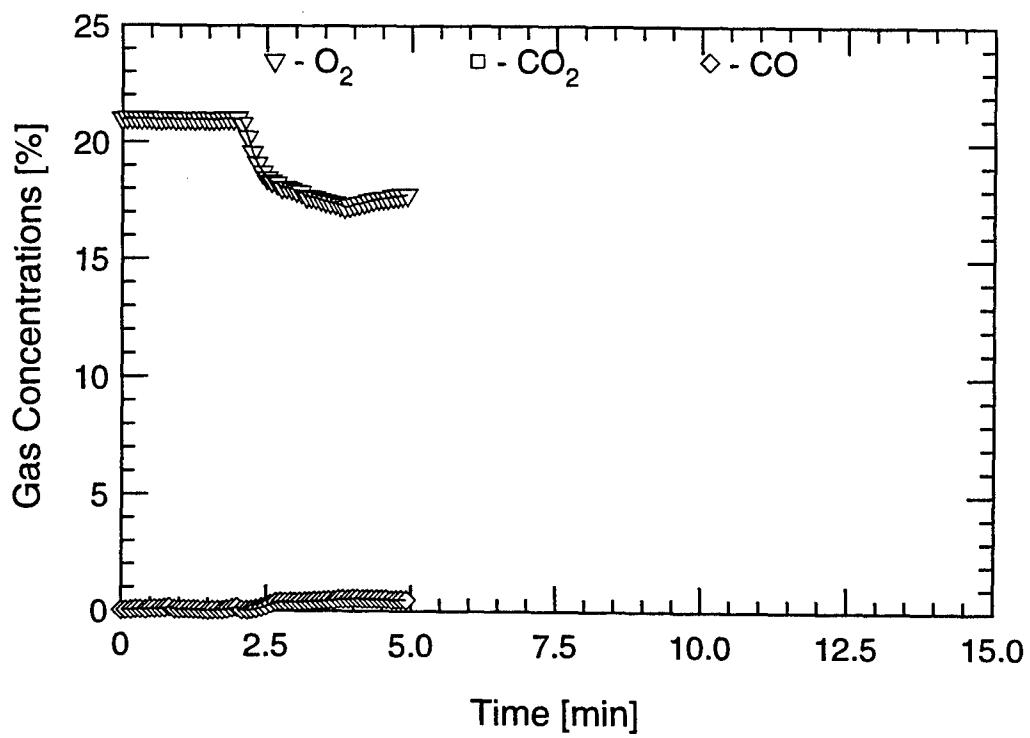


Aft Tree

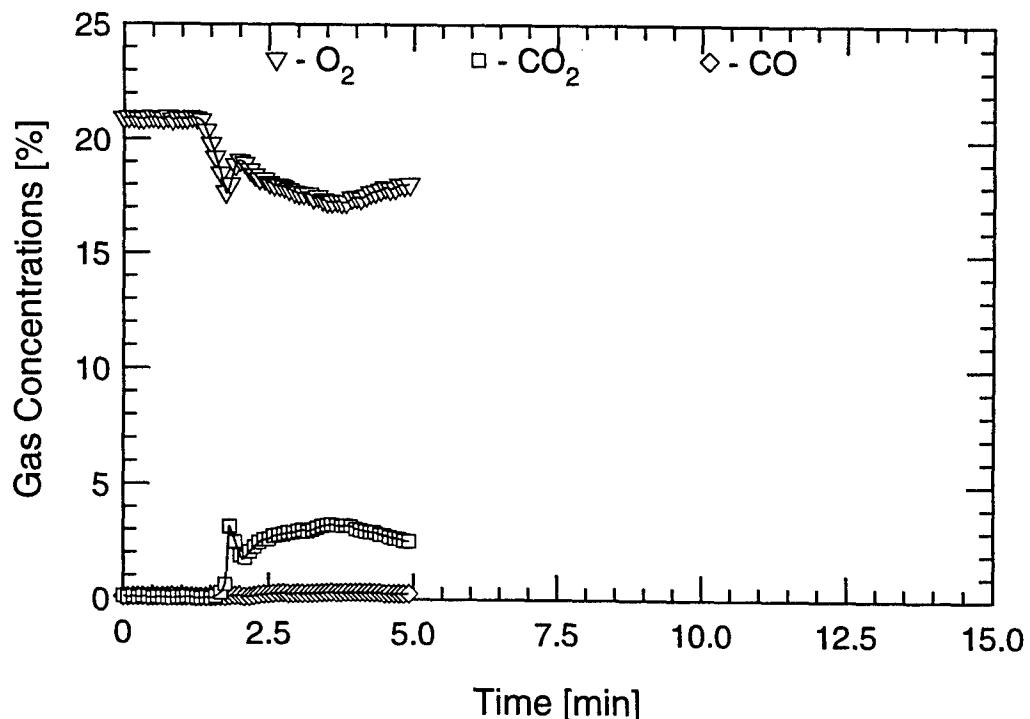


Forward Tree

TEST #73



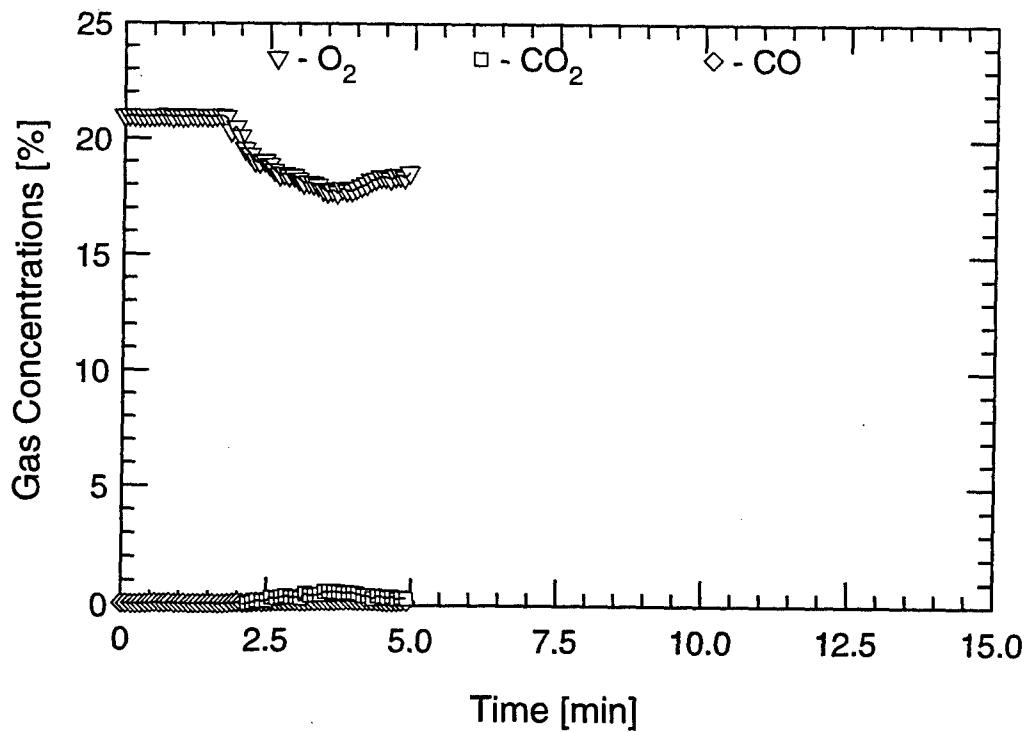
Aft Tree (Low)



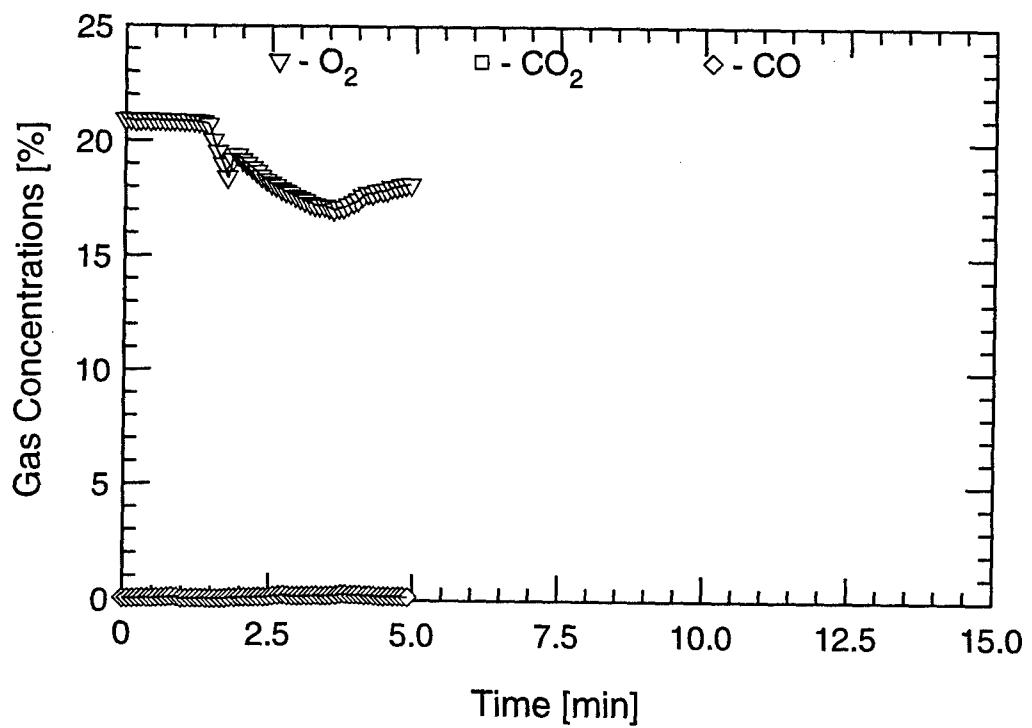
Aft Tree (High)

TEST #73

B-437



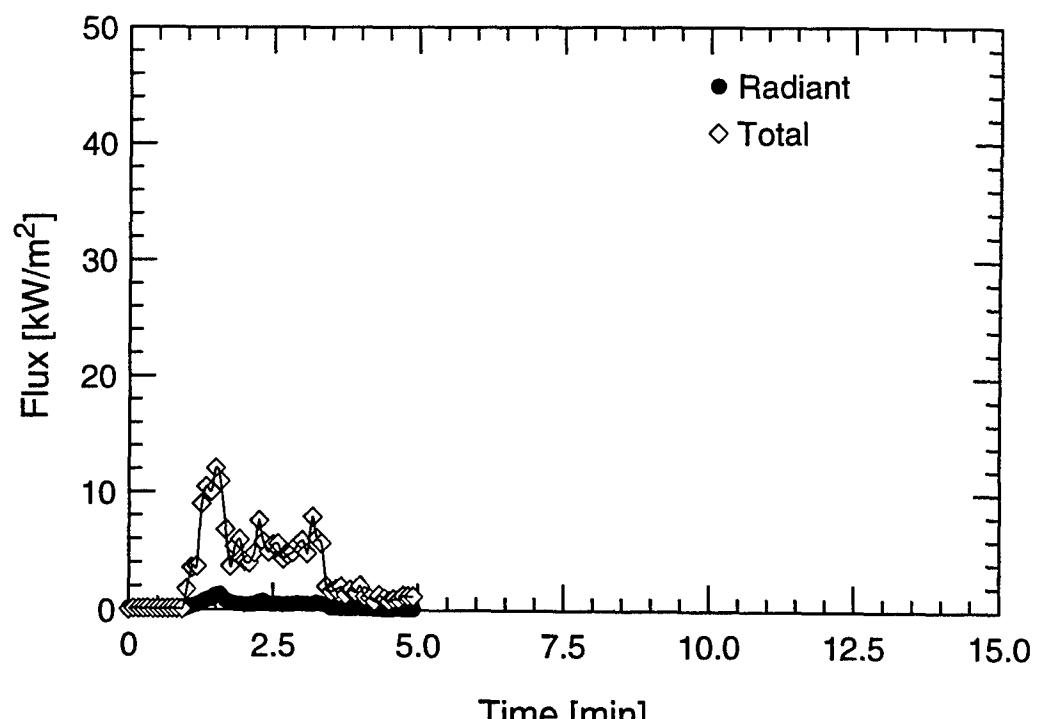
Forward Tree (Low)



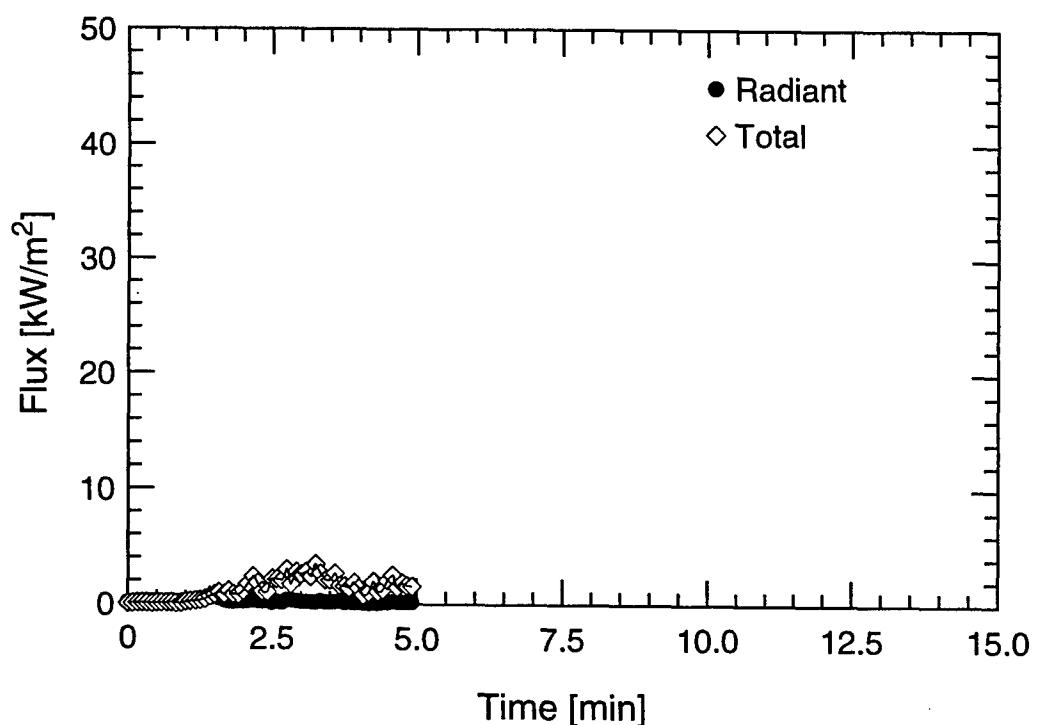
Forward Tree (High)

TEST #73

B-438



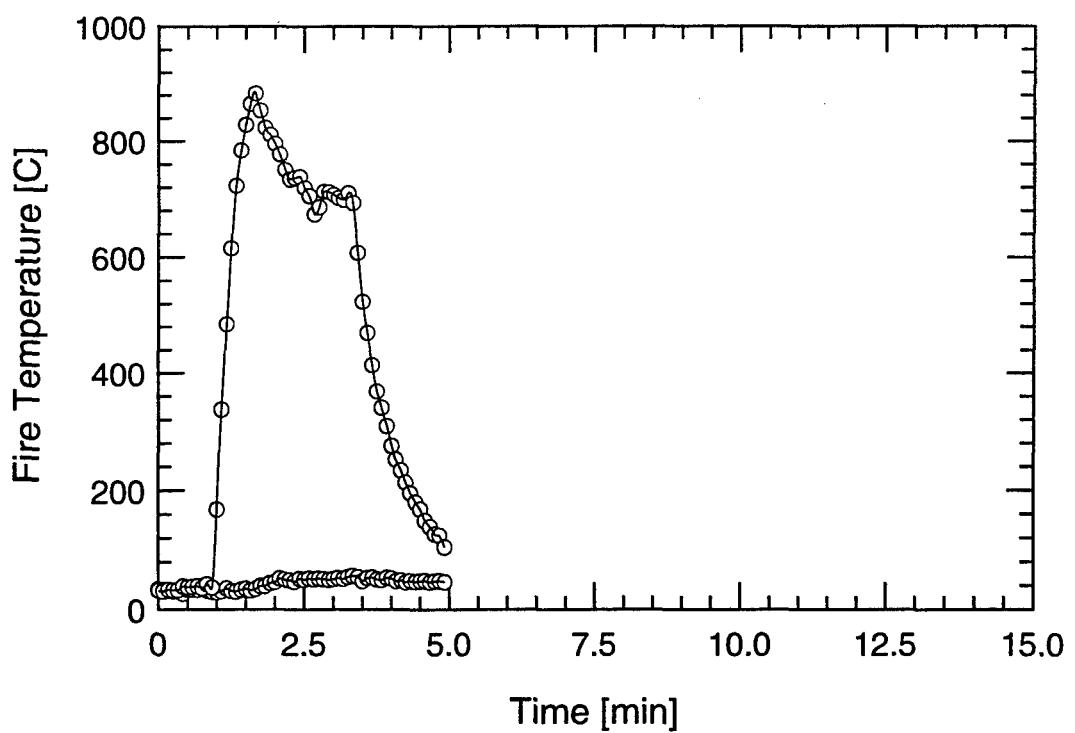
Overhead



Forward Bulkhead

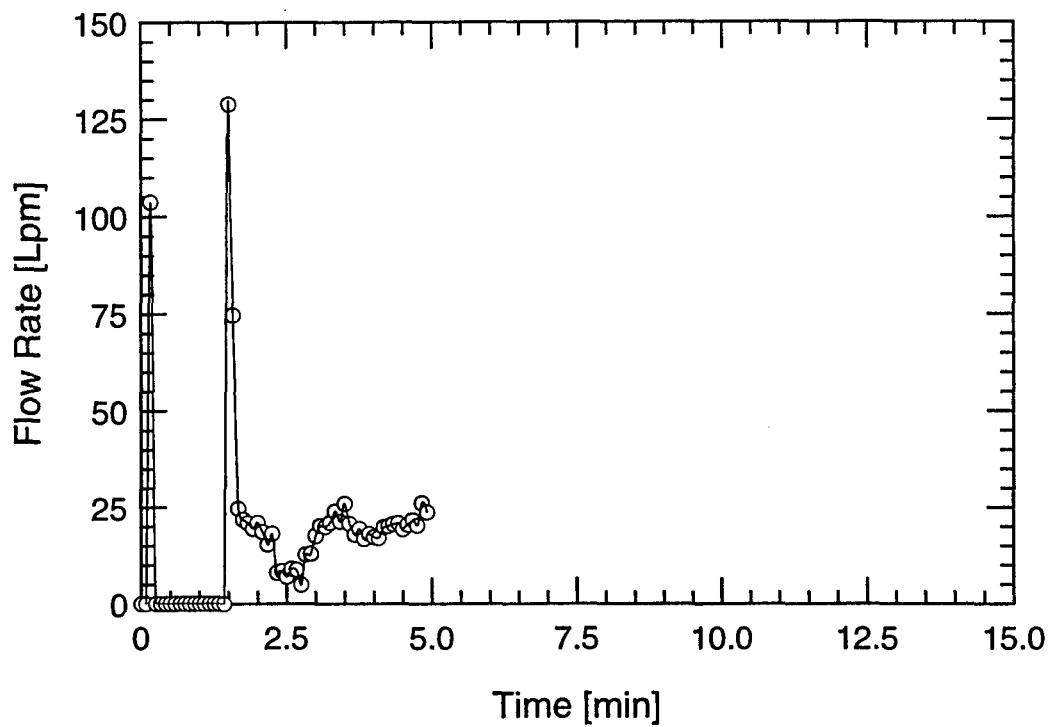
TEST #73

B-439

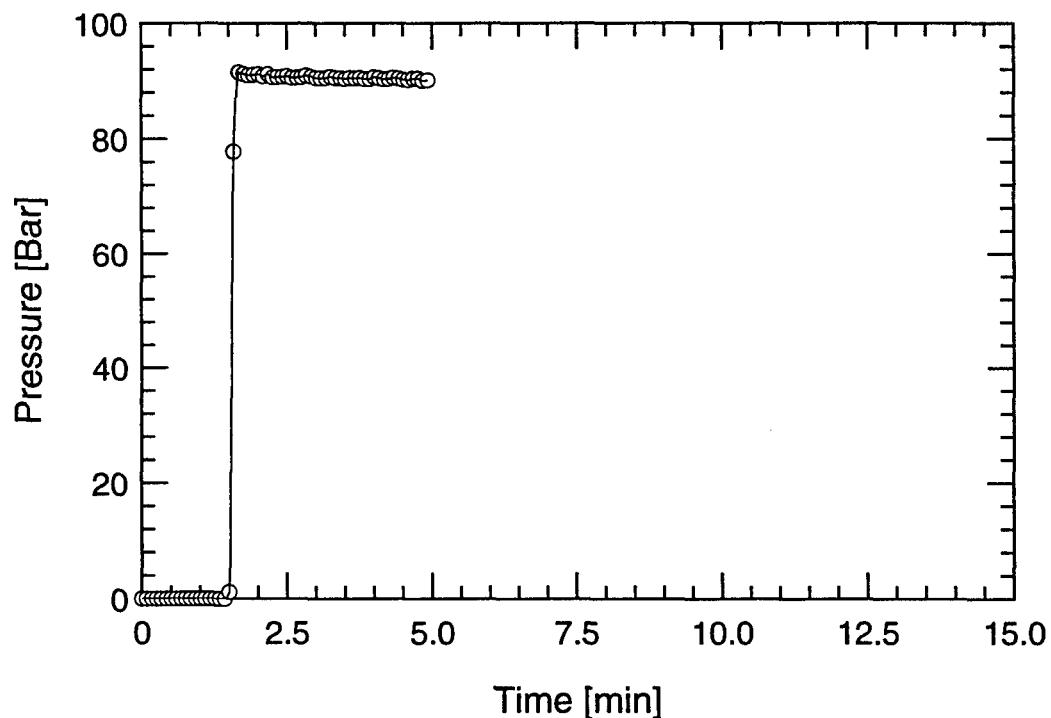


TEST #73

B-440

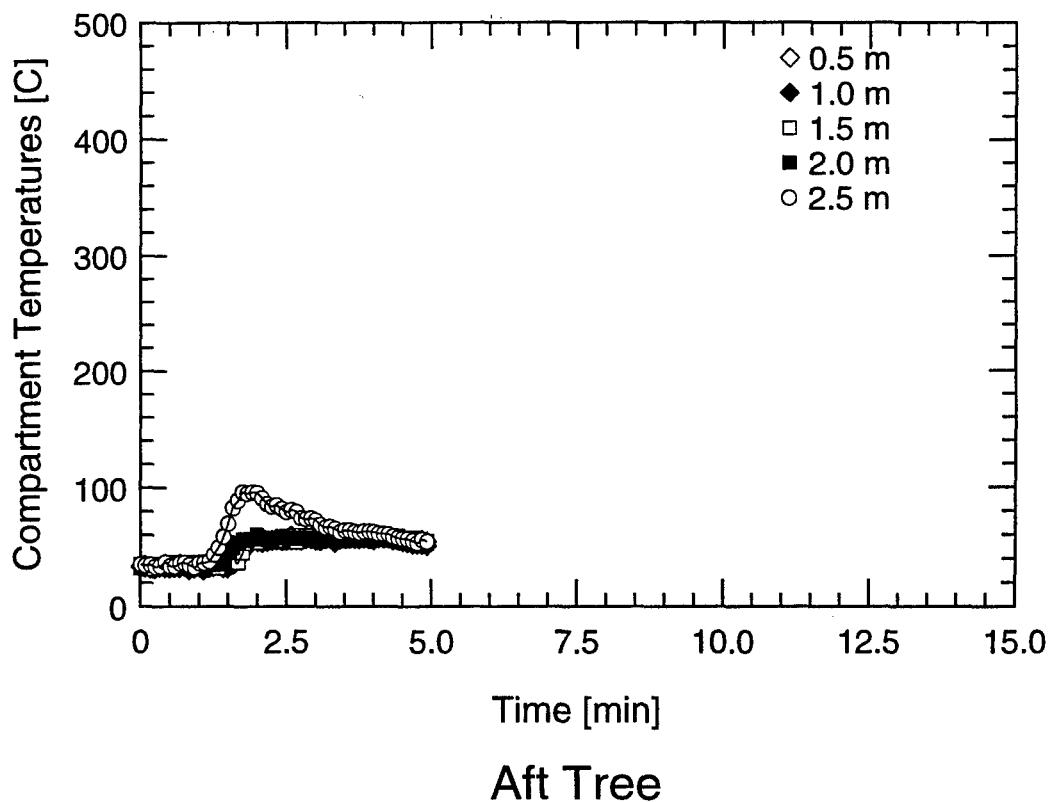


Water Mist System Flow Rate

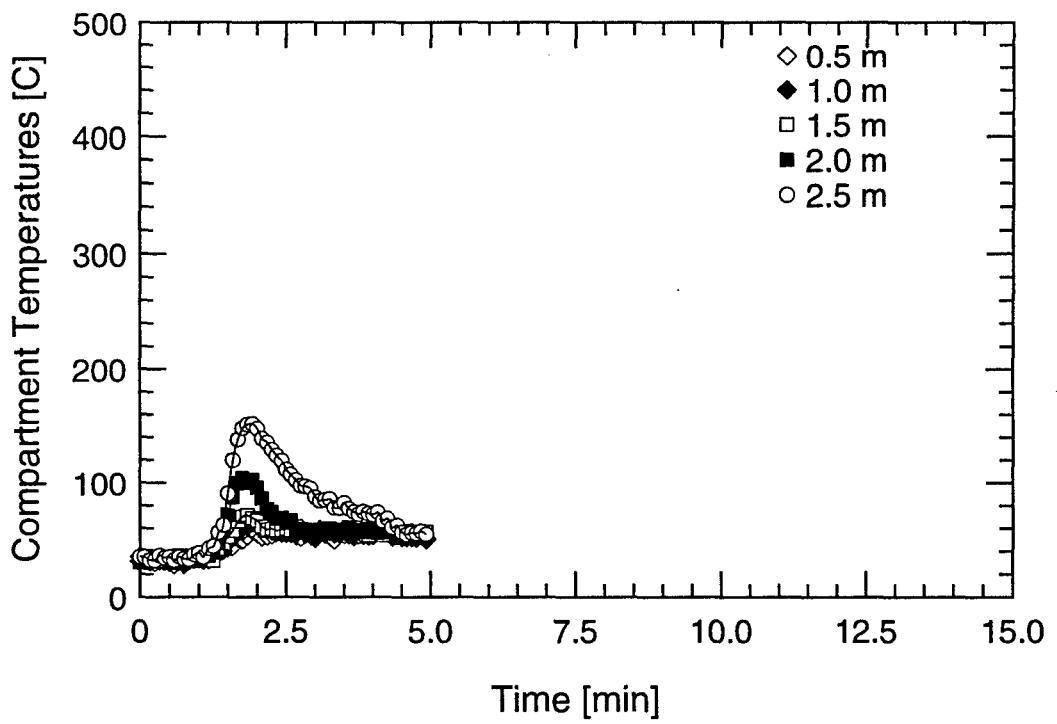


Water Mist System Pressure

TEST #73



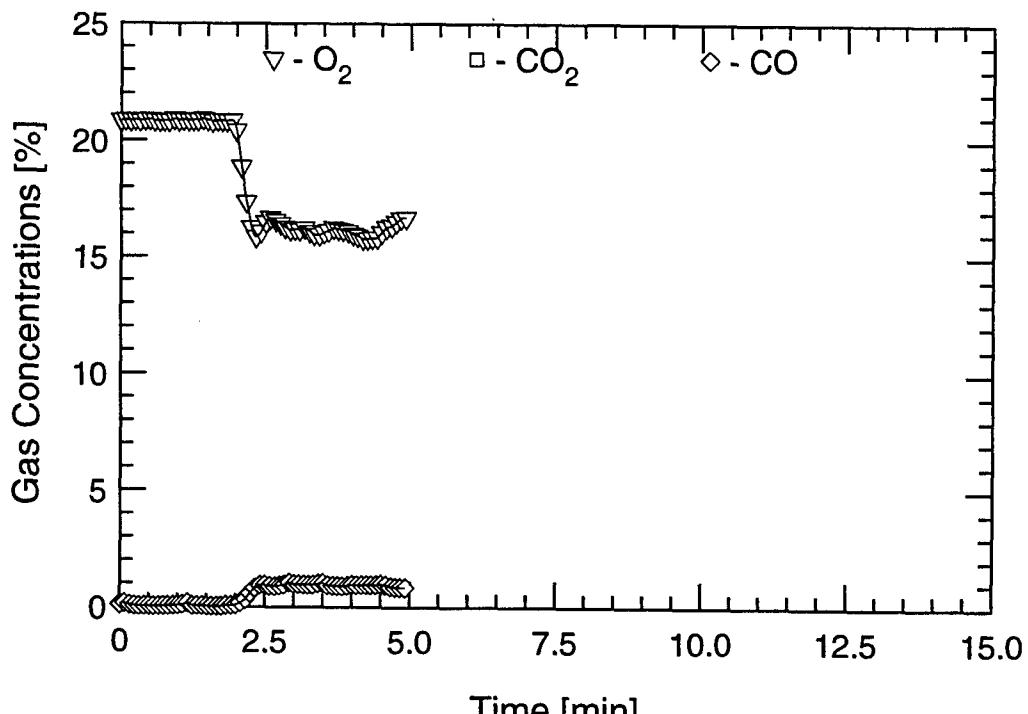
Aft Tree



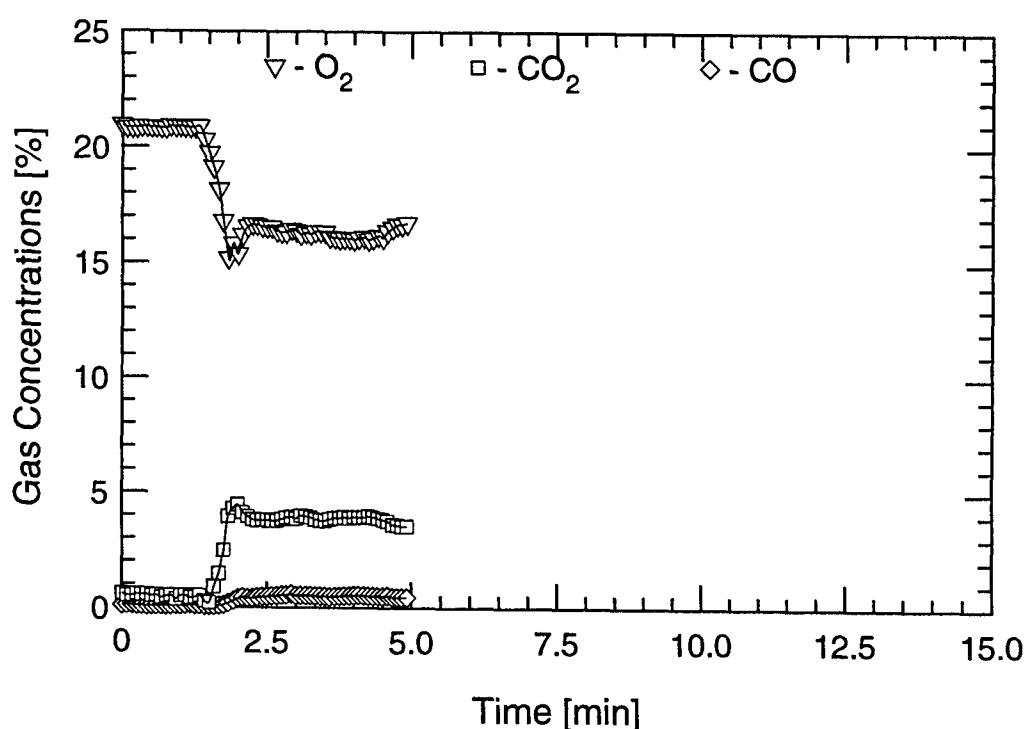
Forward Tree

TEST #74

B-442



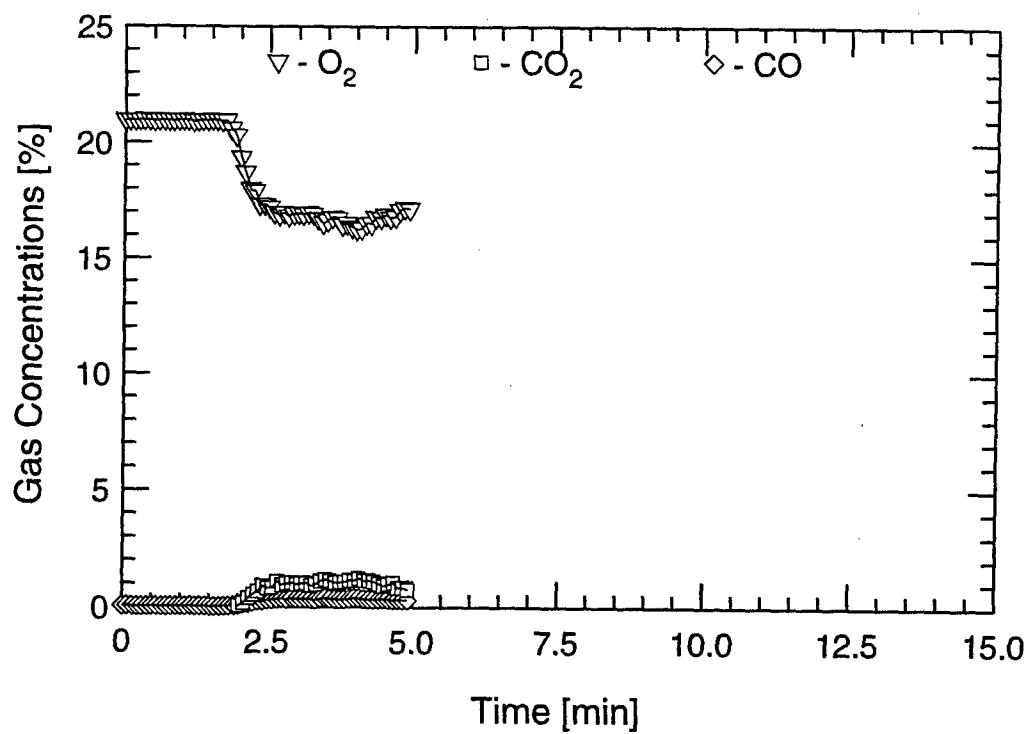
Aft Tree (Low)



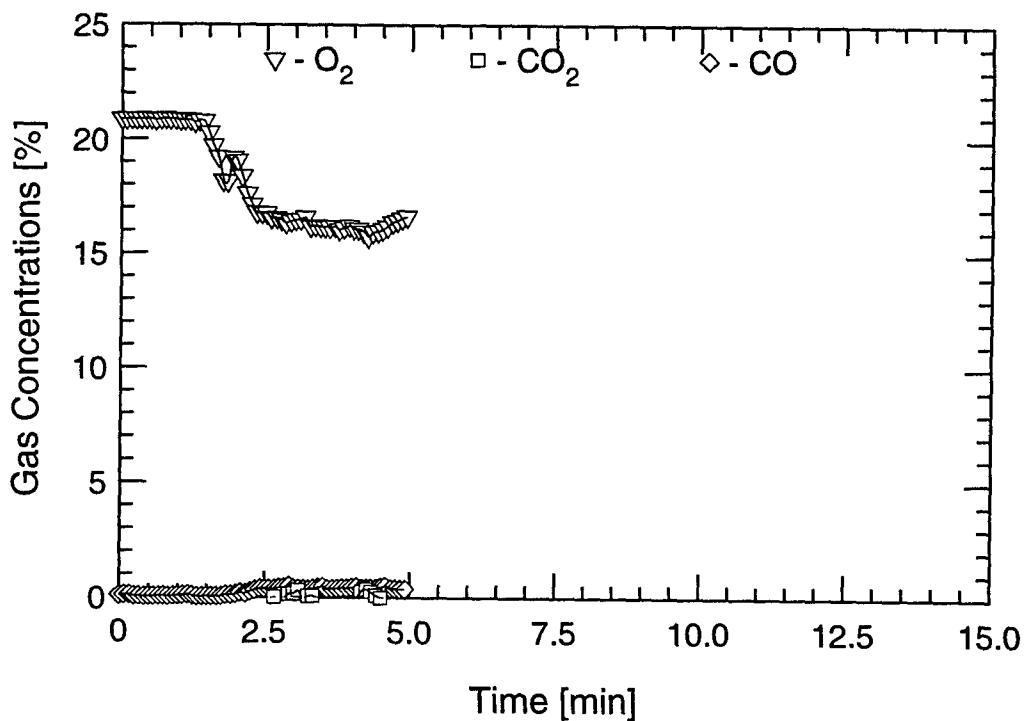
Aft Tree (High)

TEST #74

B-443



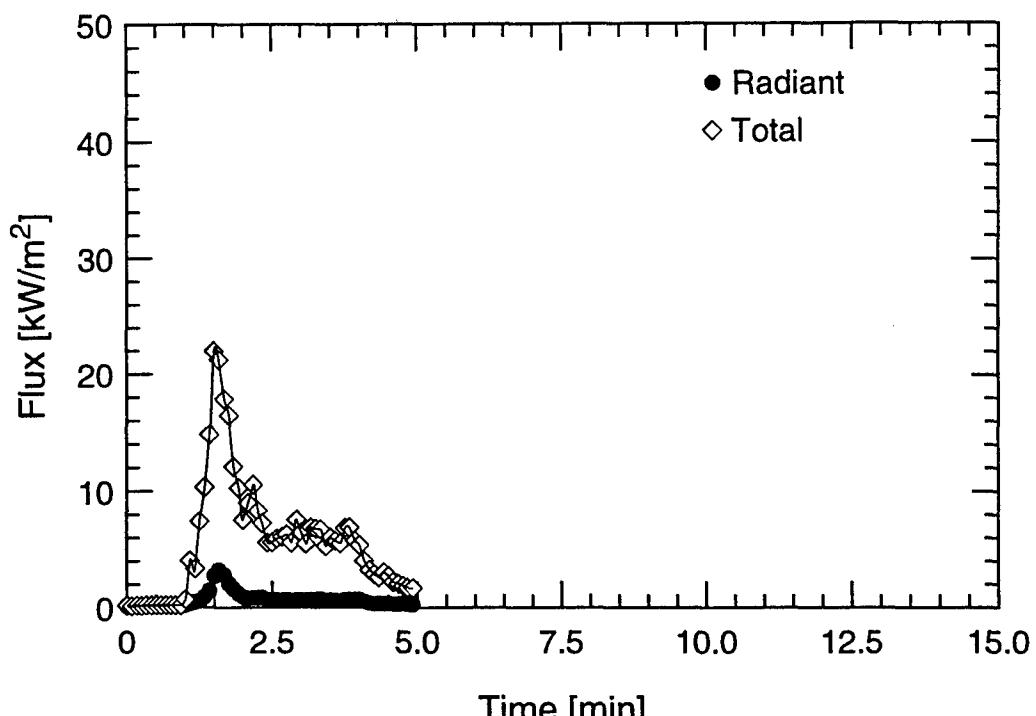
Forward Tree (Low)



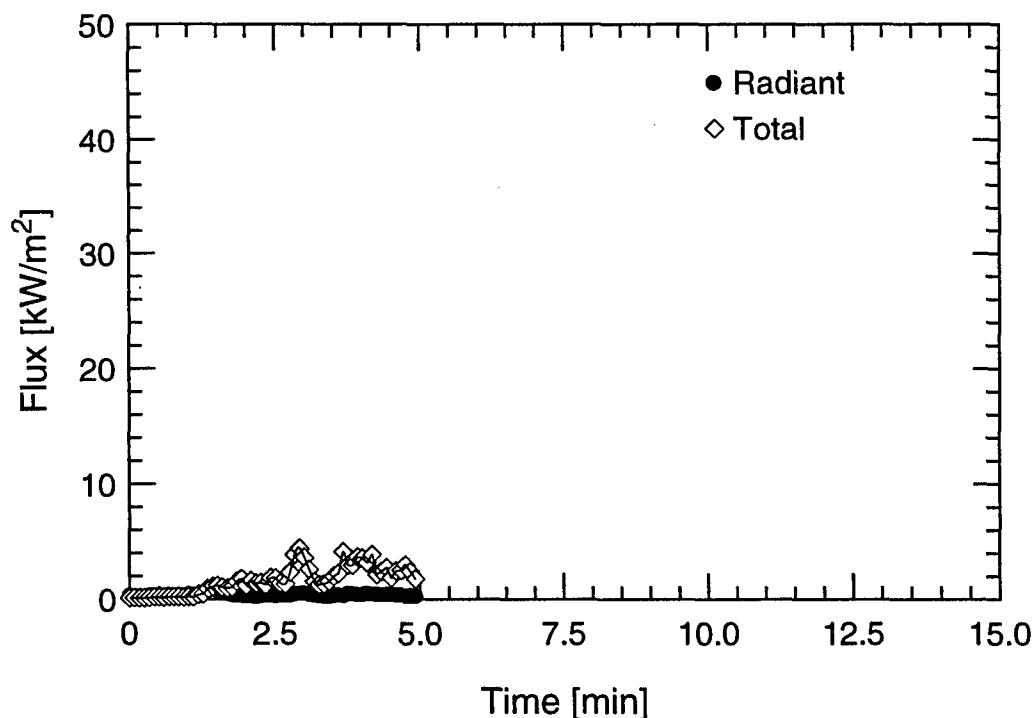
Forward Tree (High)

TEST #74

B-444



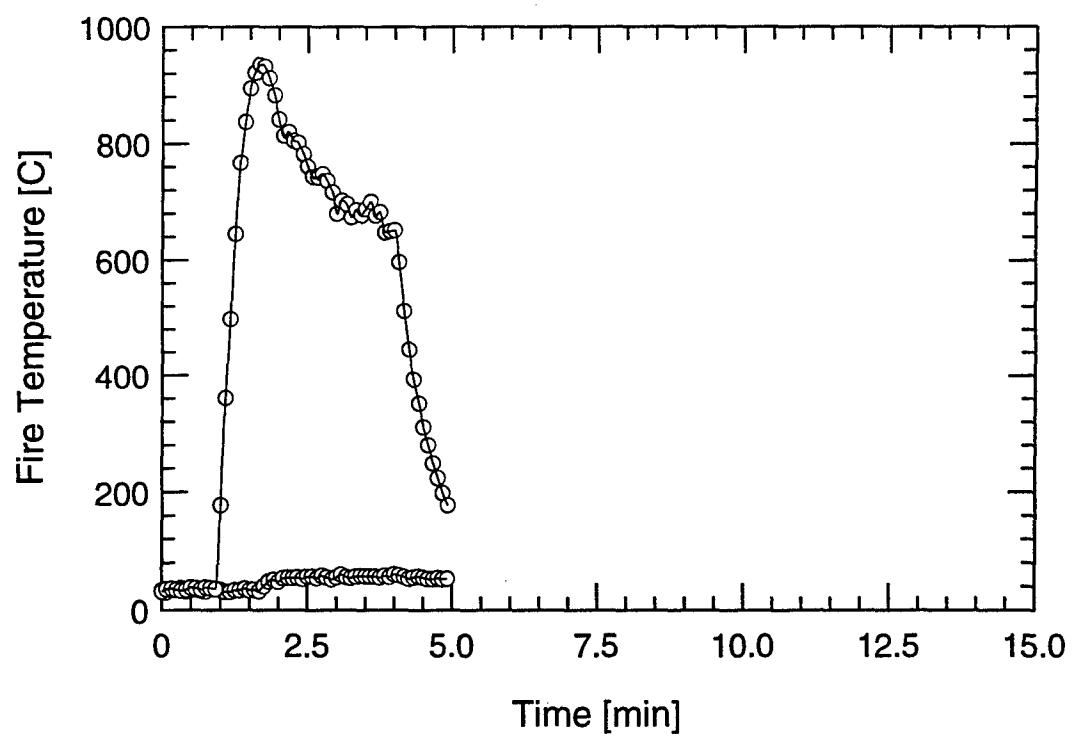
Overhead



Forward Bulkhead

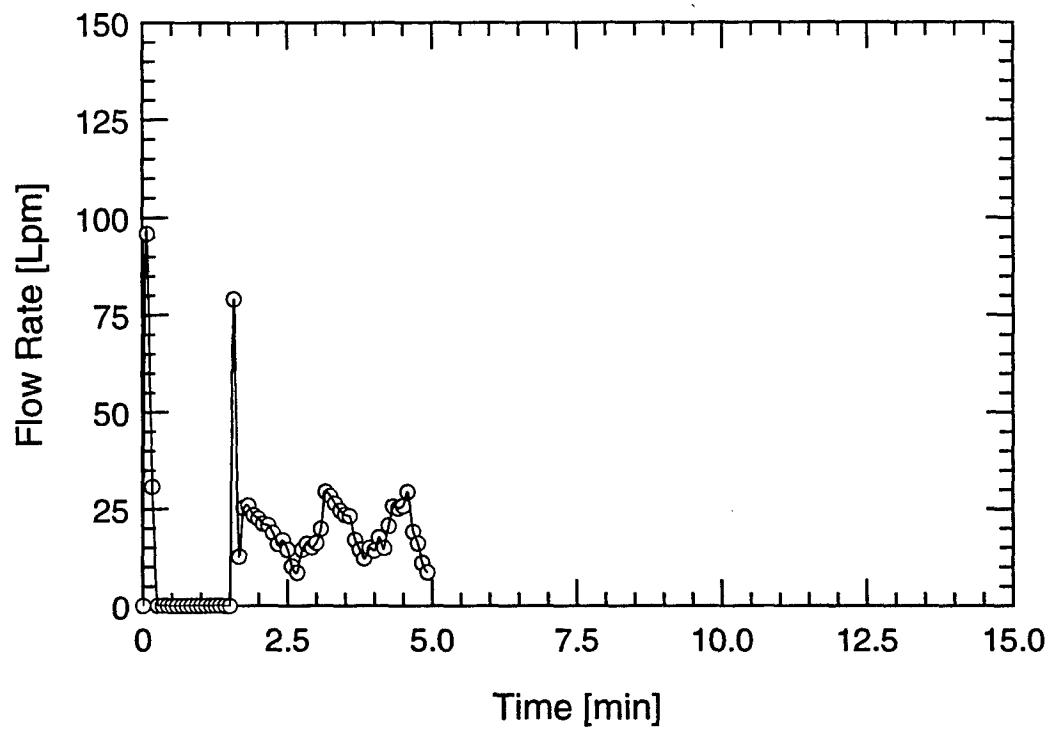
TEST #74

B-445

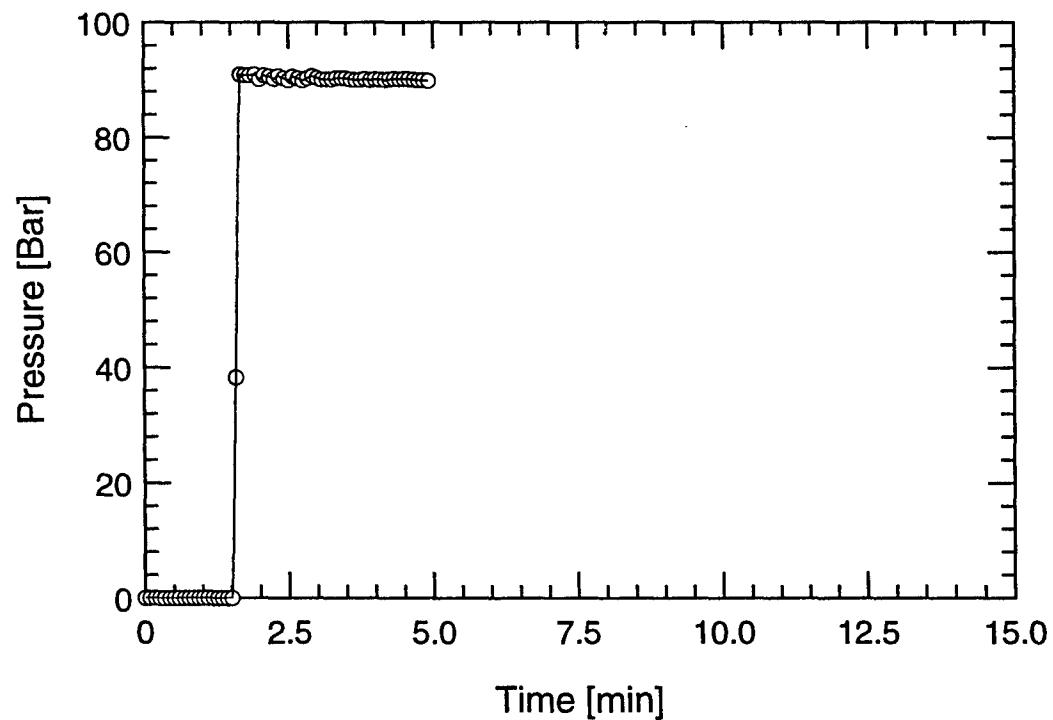


TEST #74

B-446

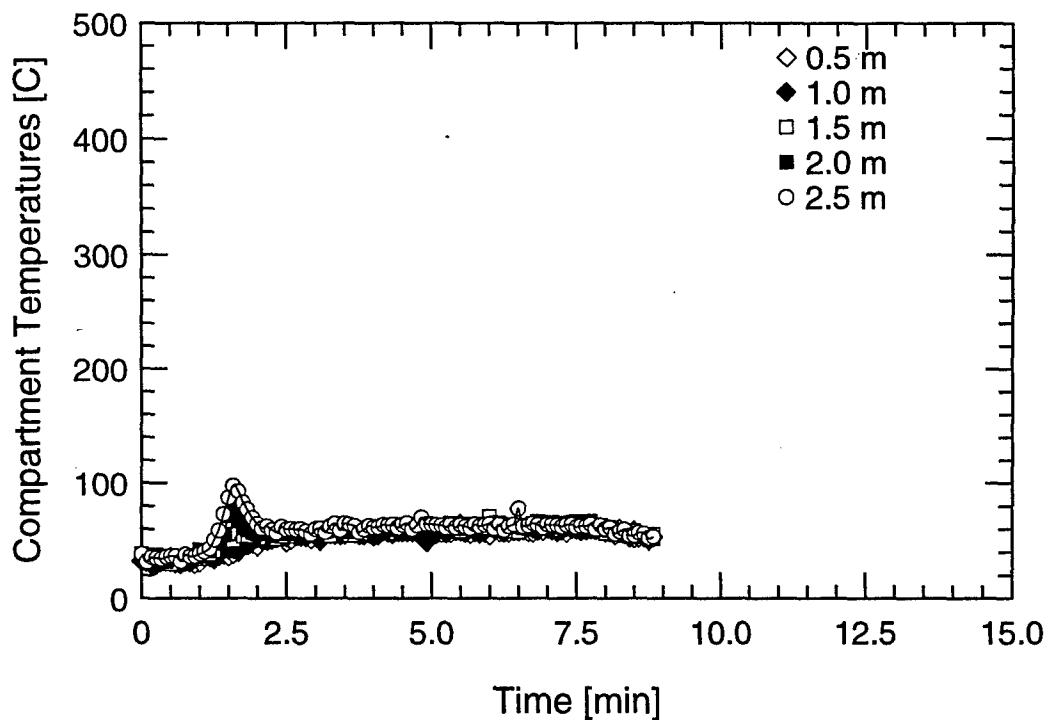
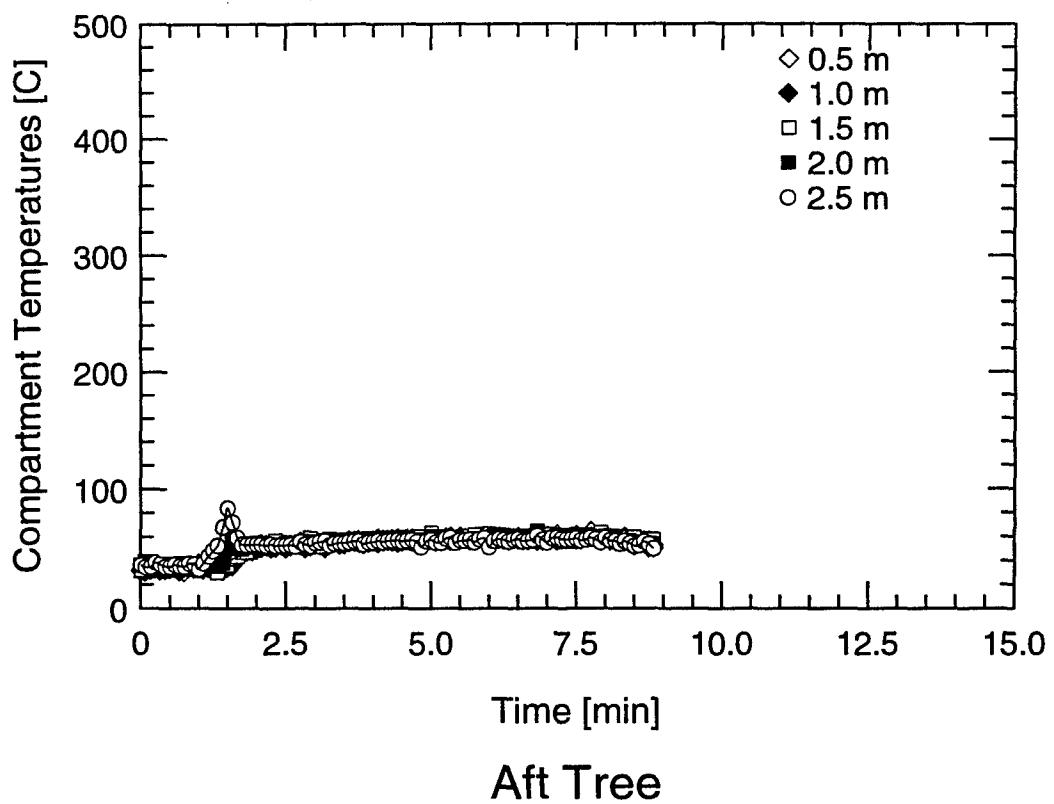


Water Mist System Flow Rate



Water Mist System Pressure

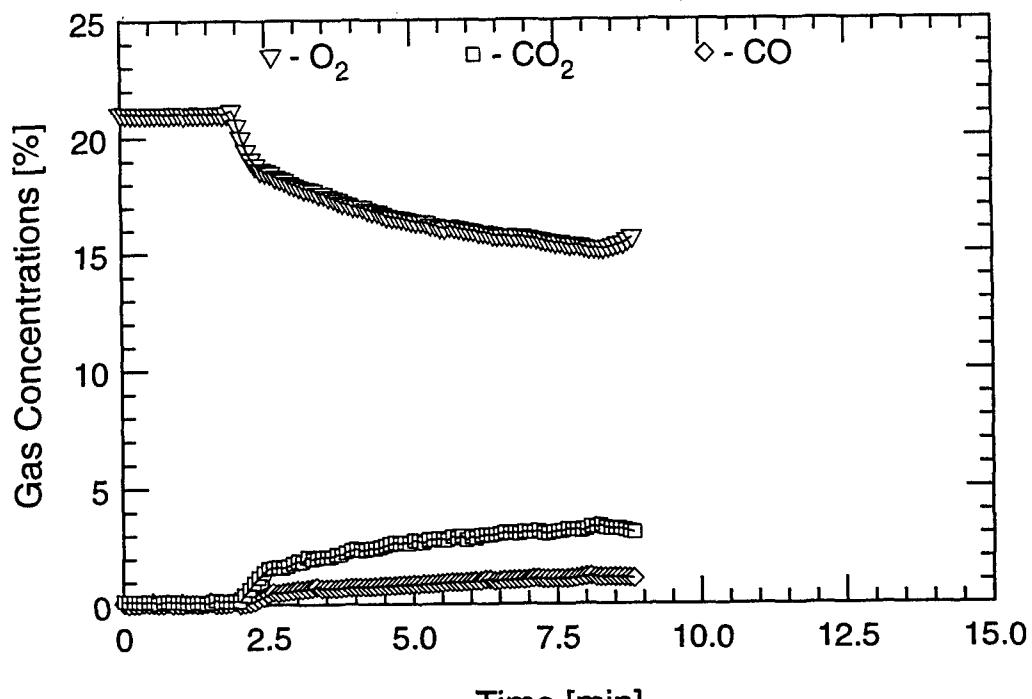
TEST #74



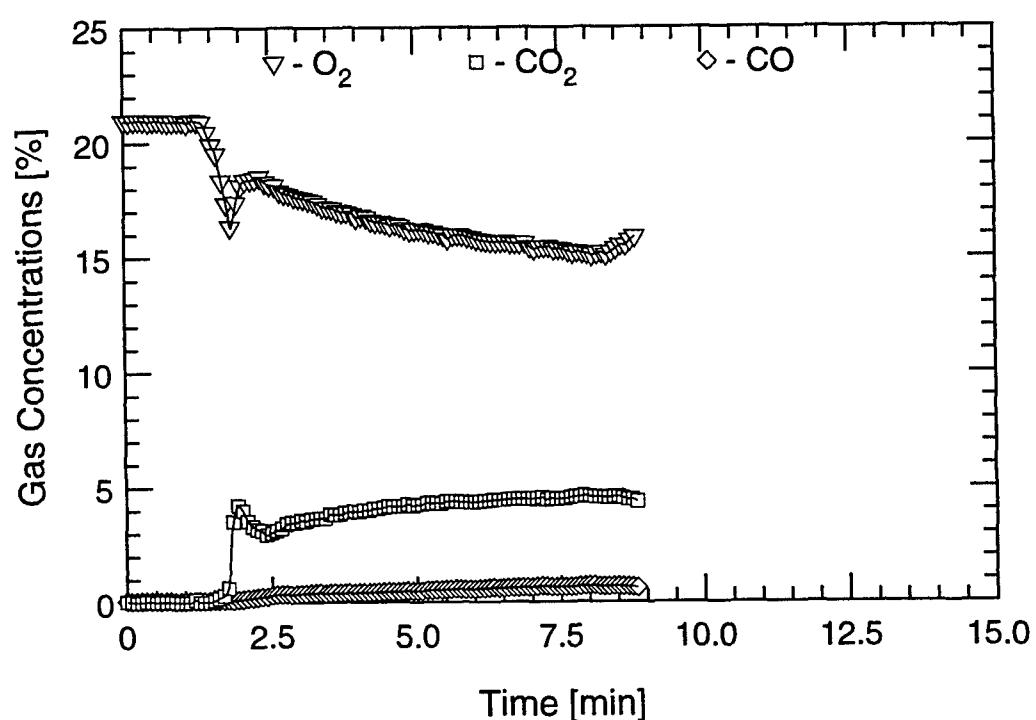
Forward Tree

TEST #75

B-448



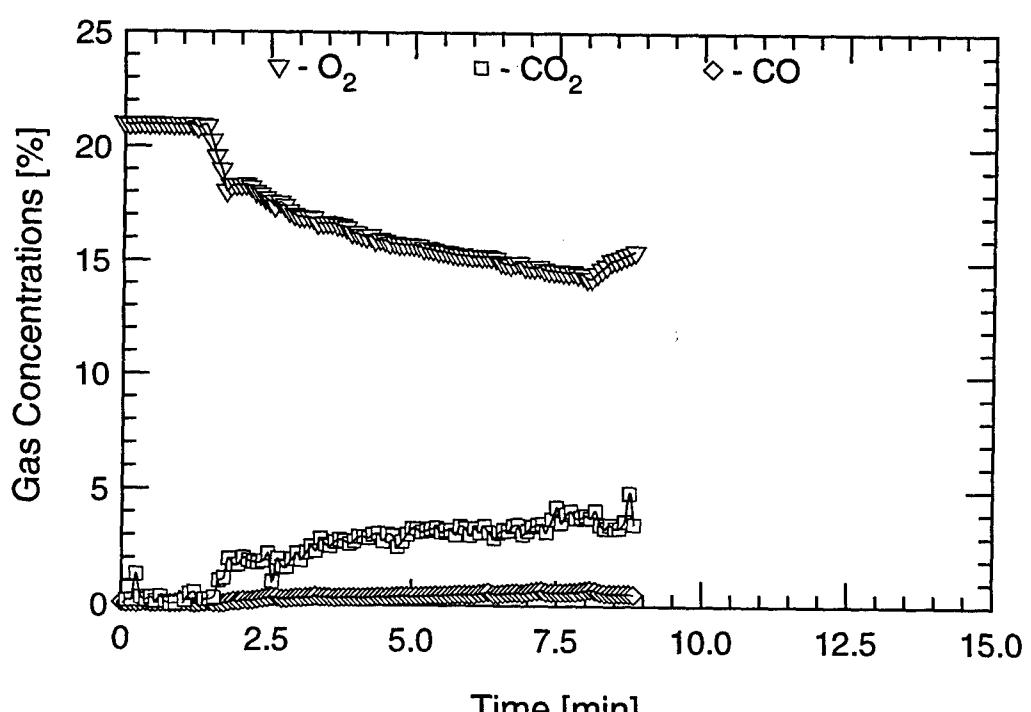
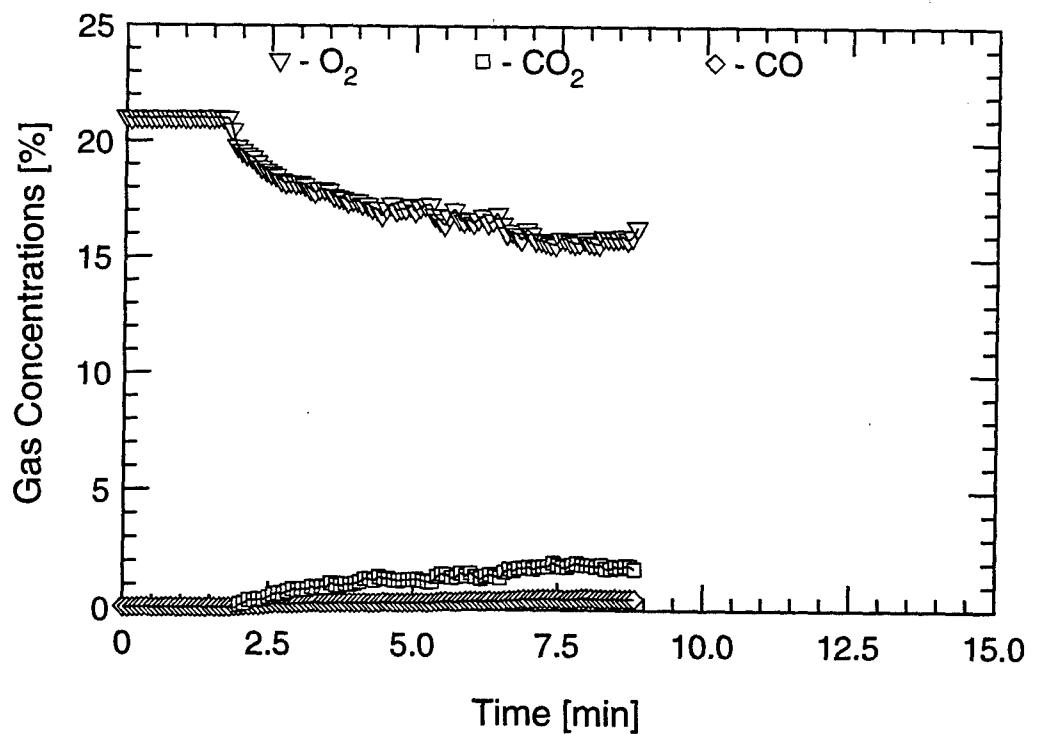
Aft Tree (Low)



Aft Tree (High)

TEST #75

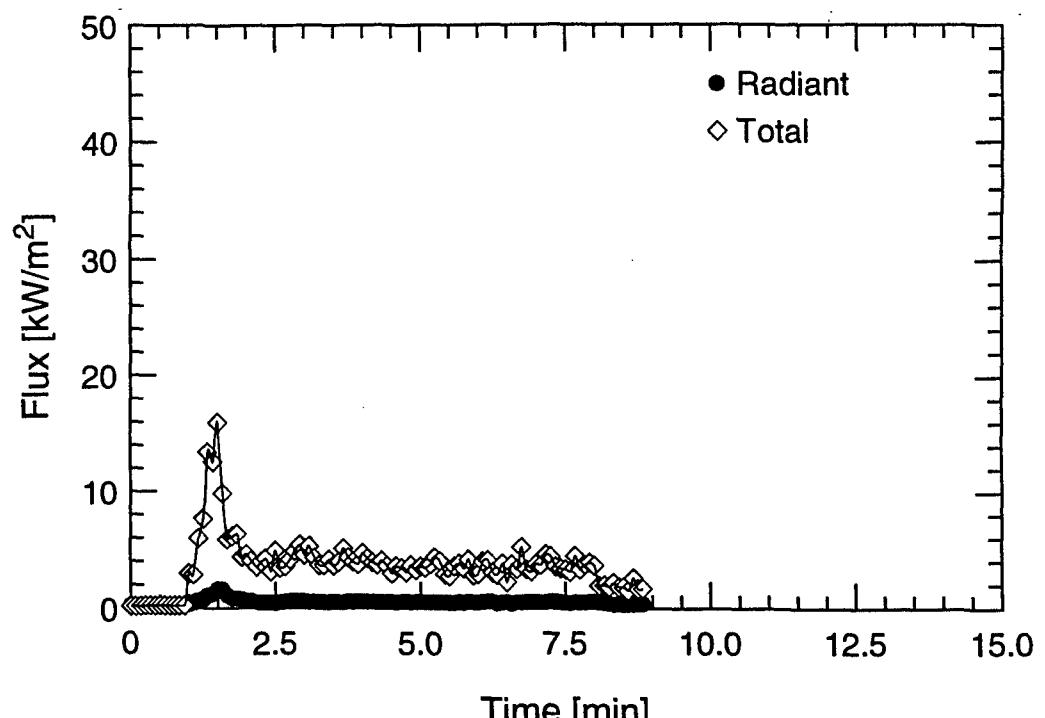
B-449



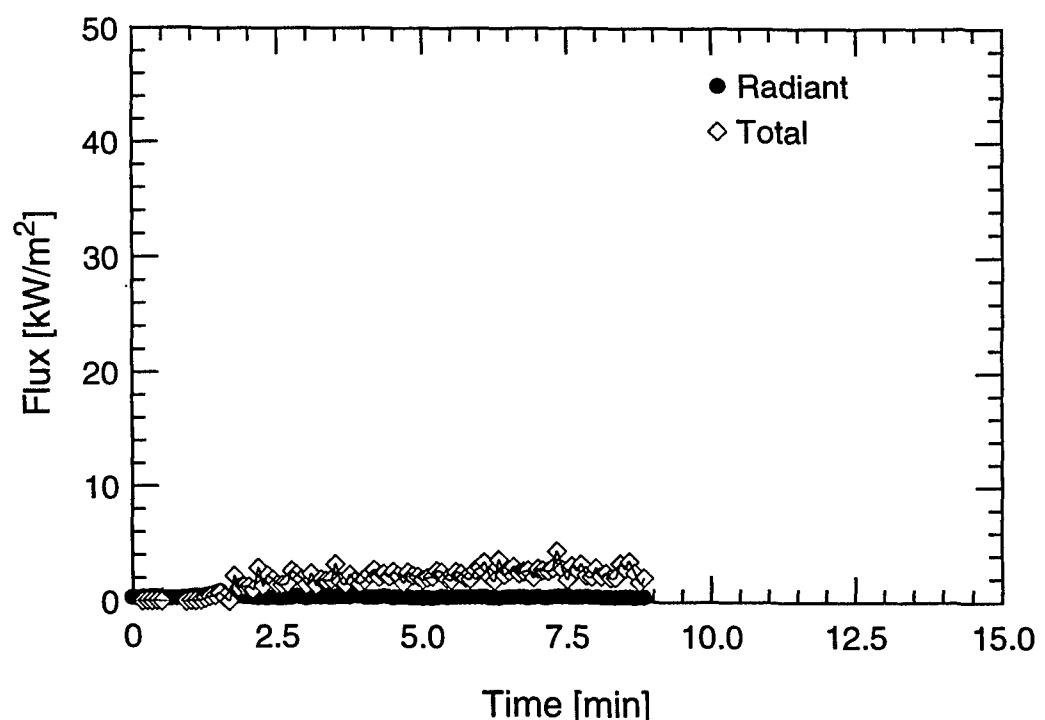
Forward Tree (High)

TEST #75

B-450

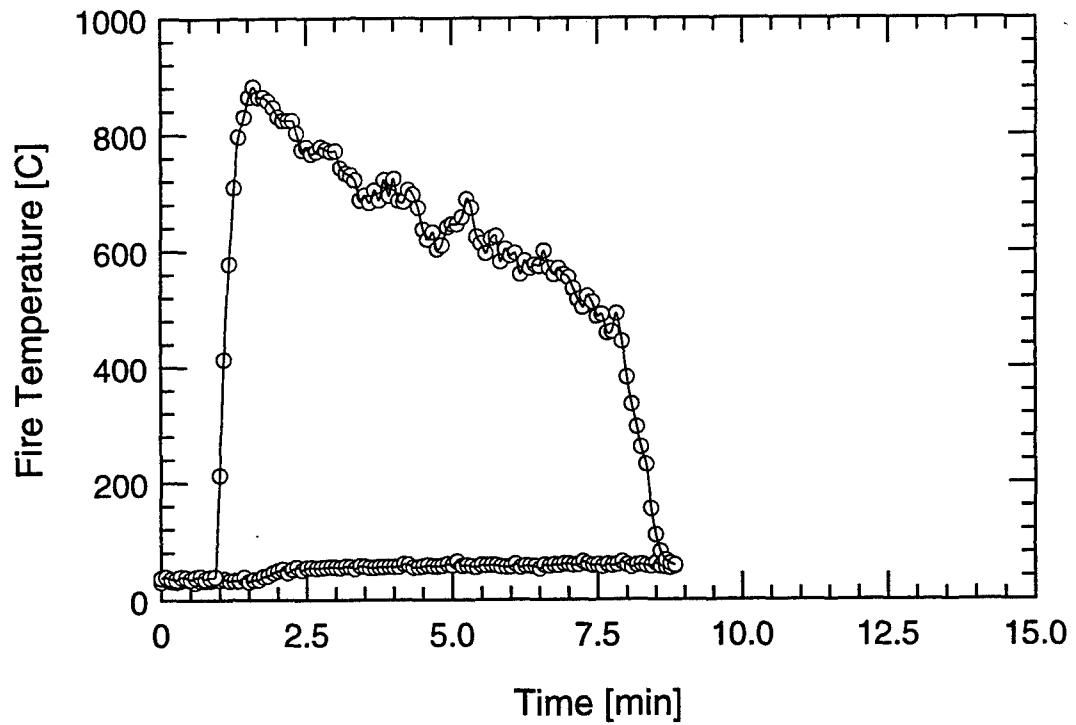


Overhead



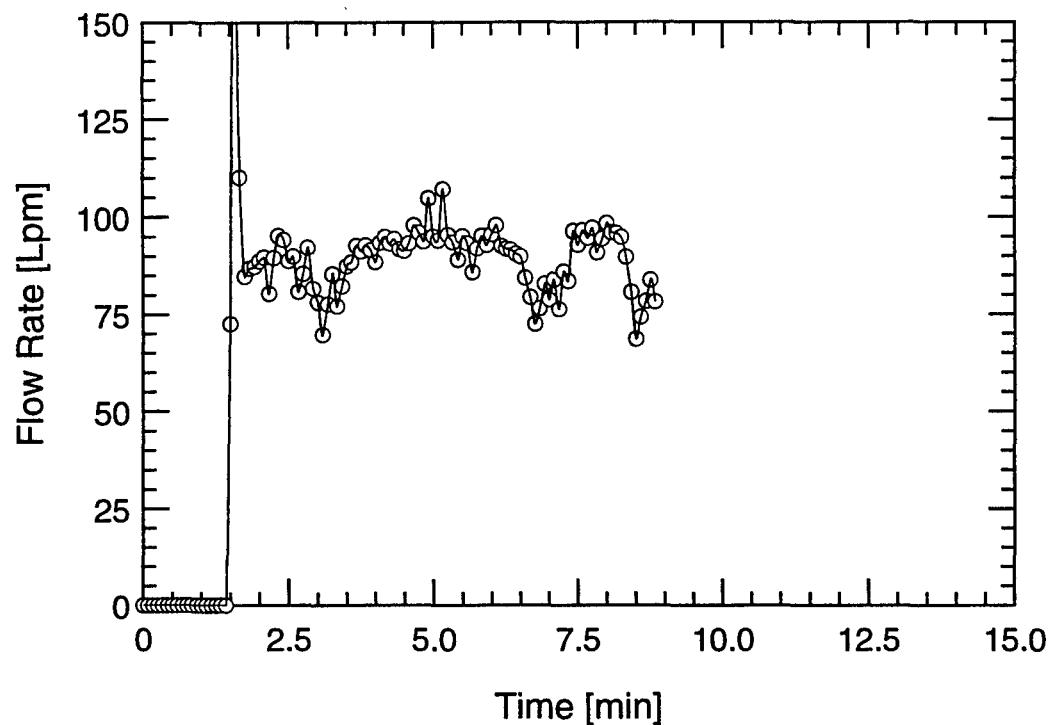
Forward Bulkhead

TEST #75

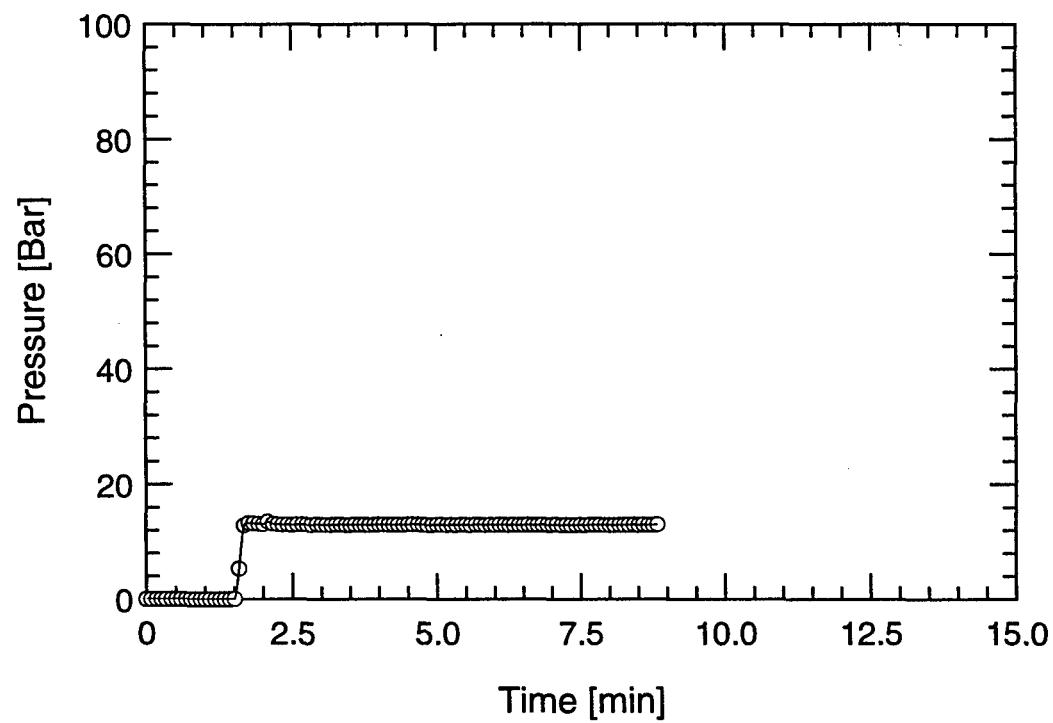


TEST #75

B-452



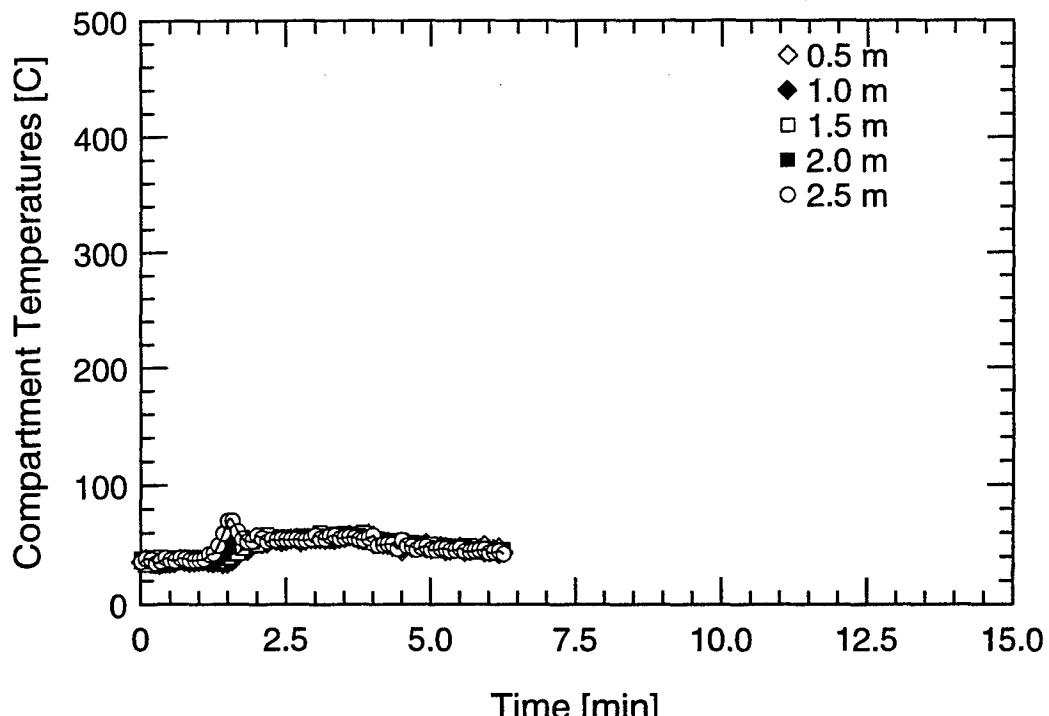
Water Mist System Flow Rate



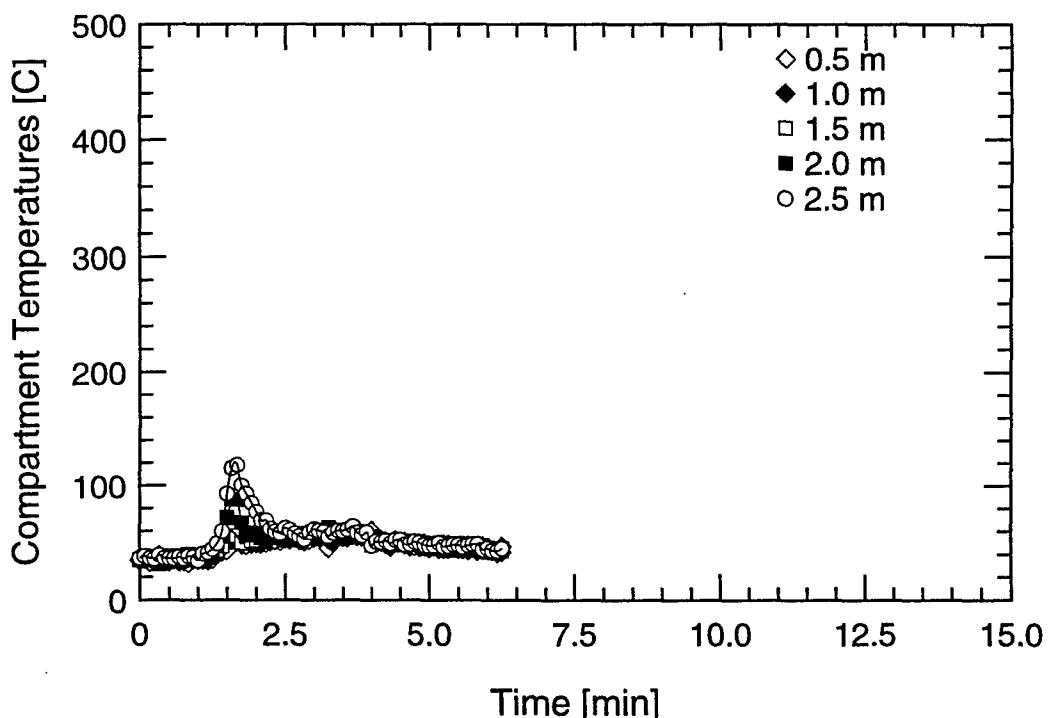
Water Mist System Pressure

TEST #75

B-453



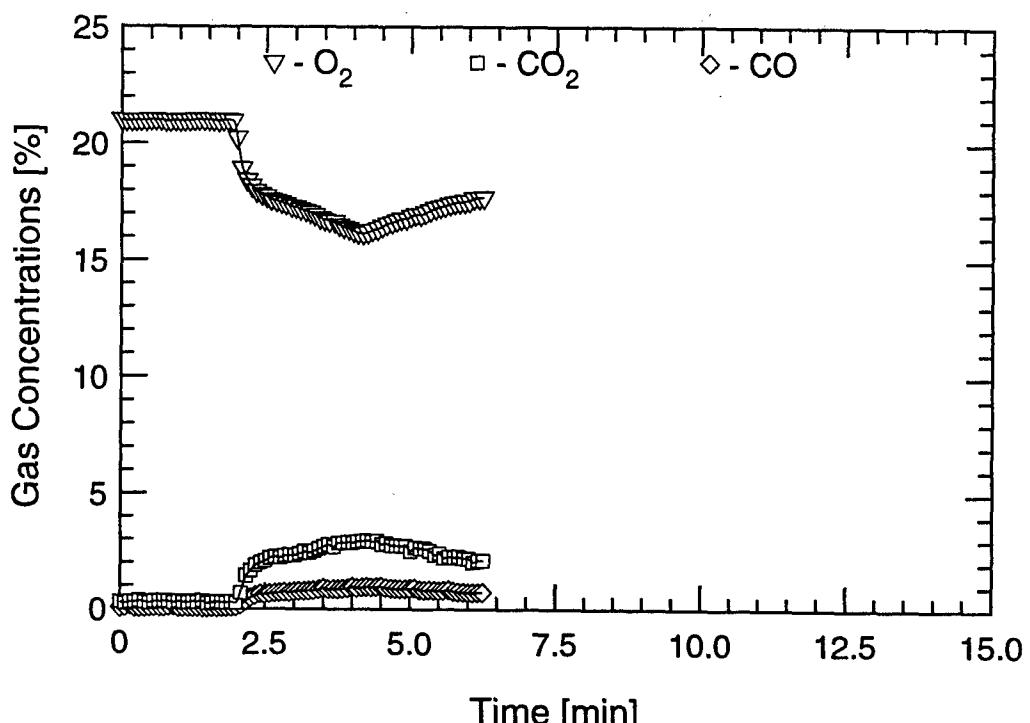
Aft Tree



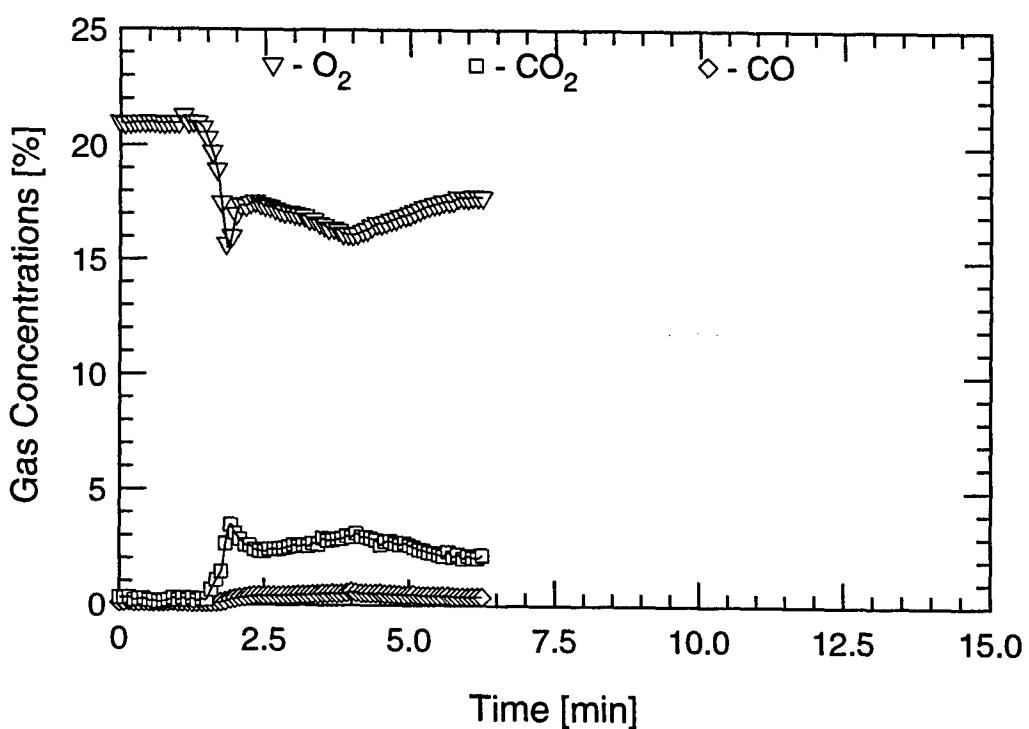
Forward Tree

TEST #76

B-454



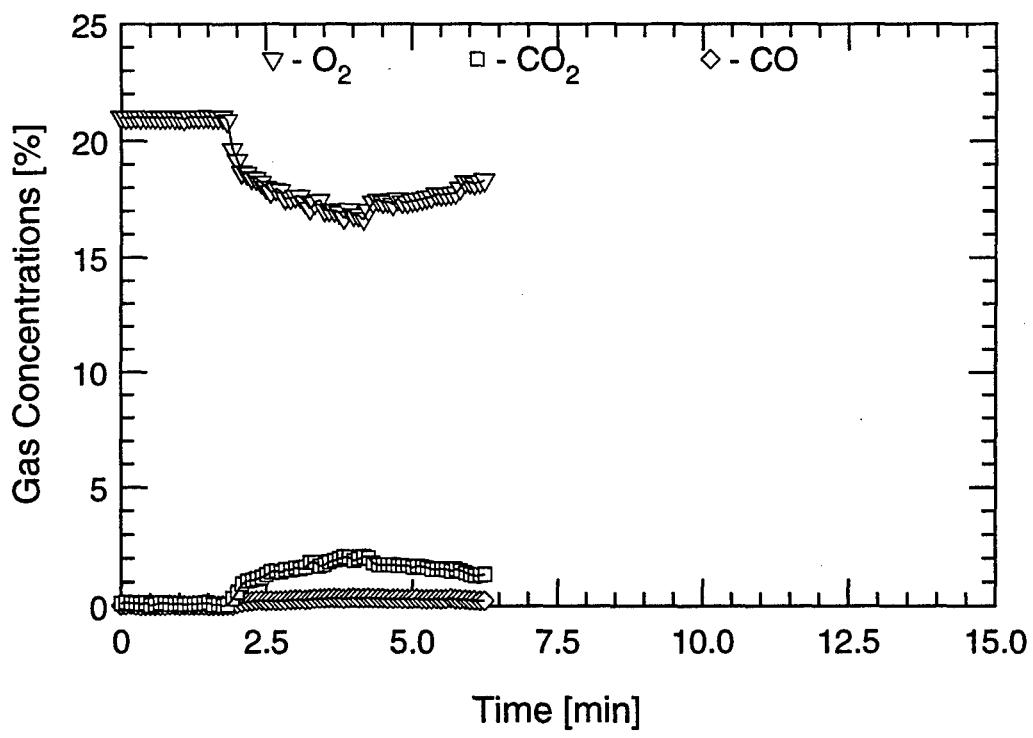
Aft Tree (Low)



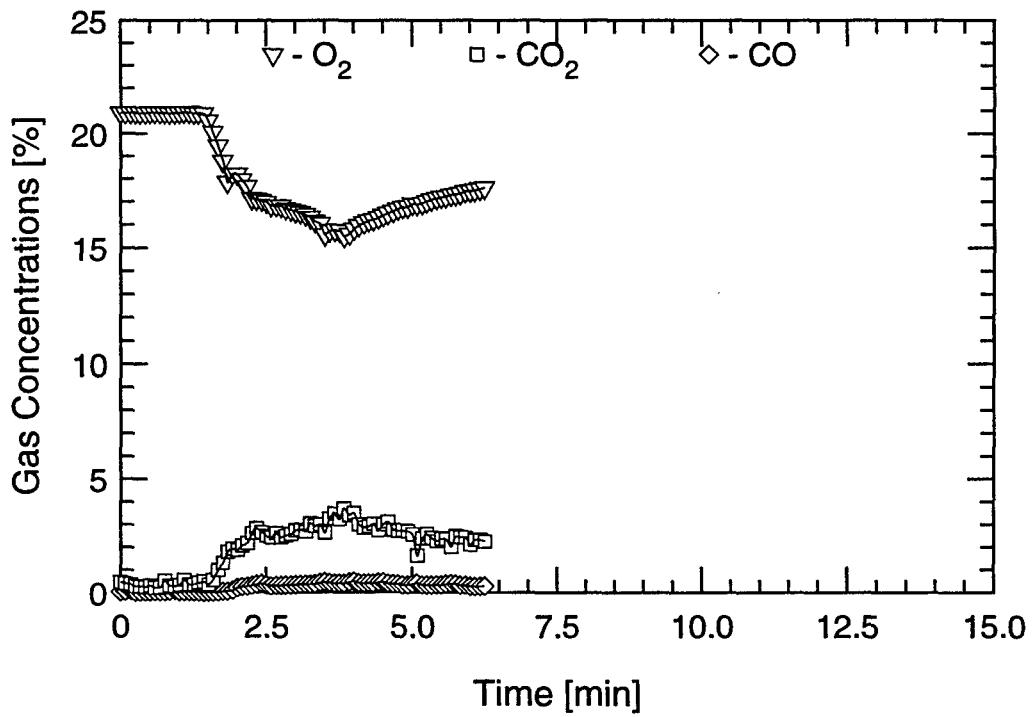
Aft Tree (High)

TEST #76

B-455



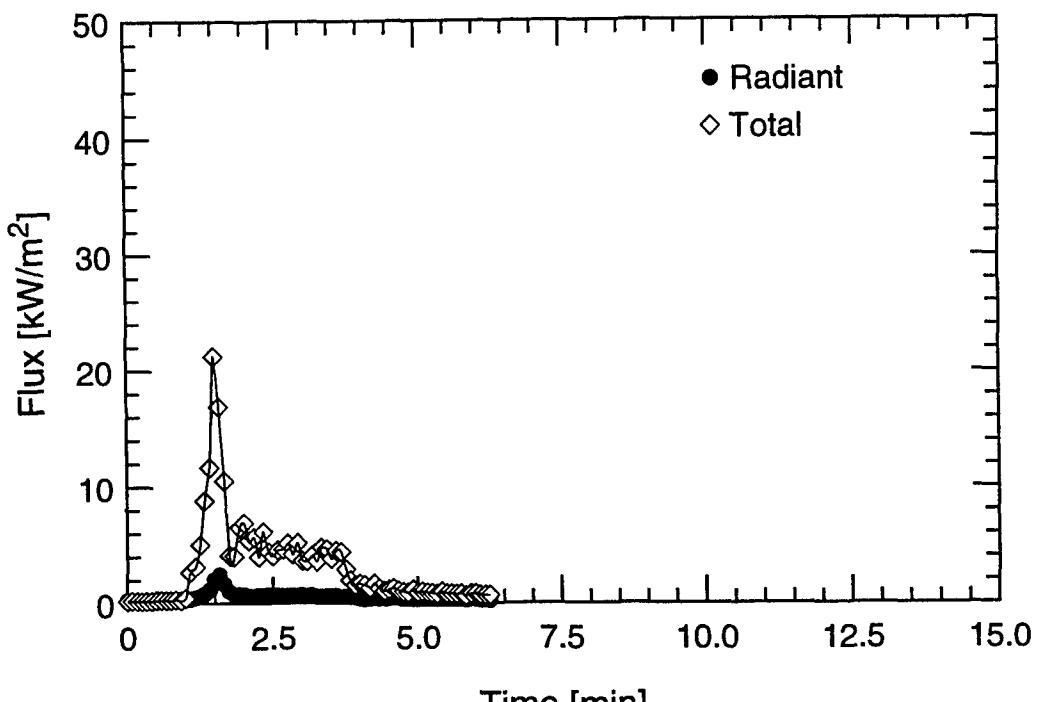
Forward Tree (Low)



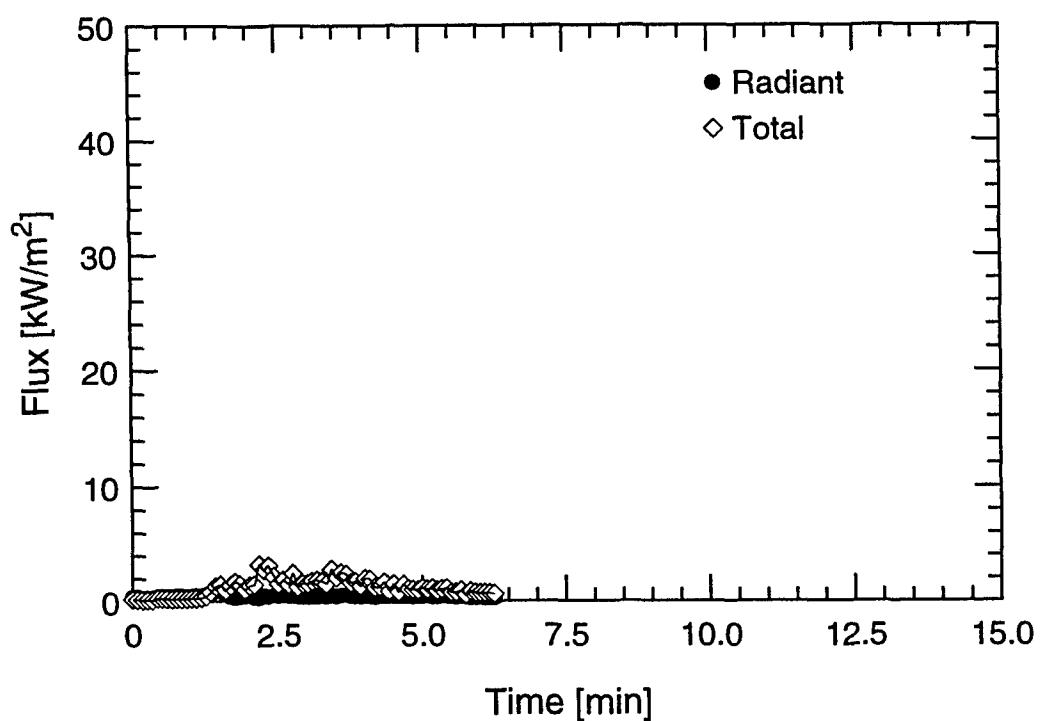
Forward Tree (High)

TEST #76

B-456

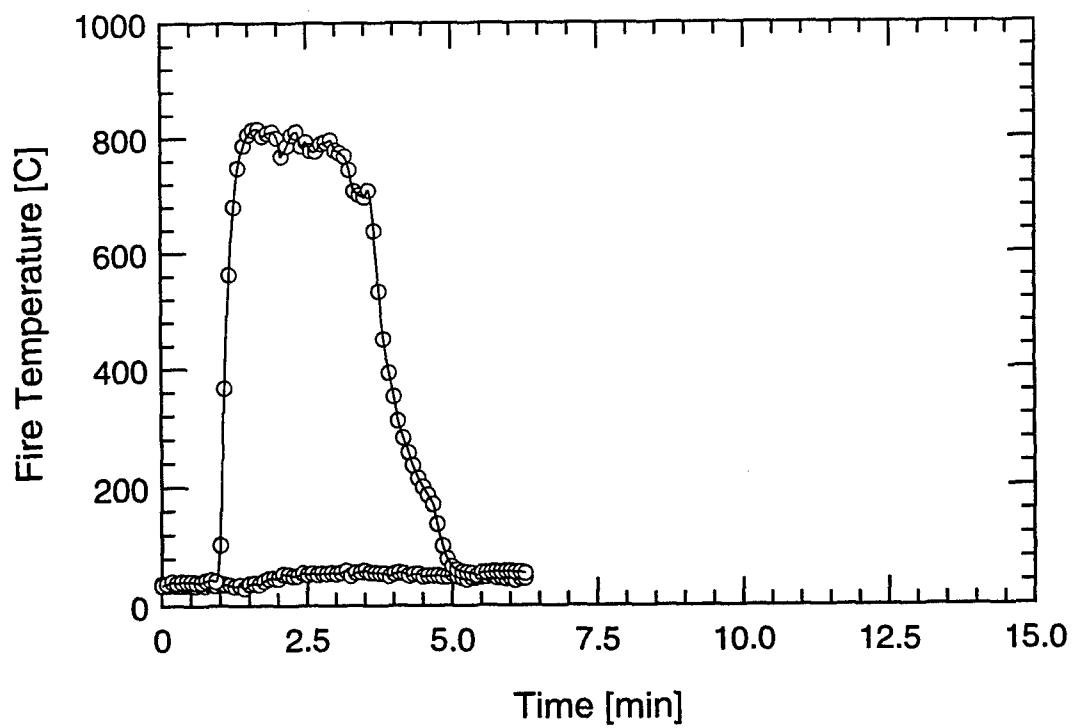


Overhead



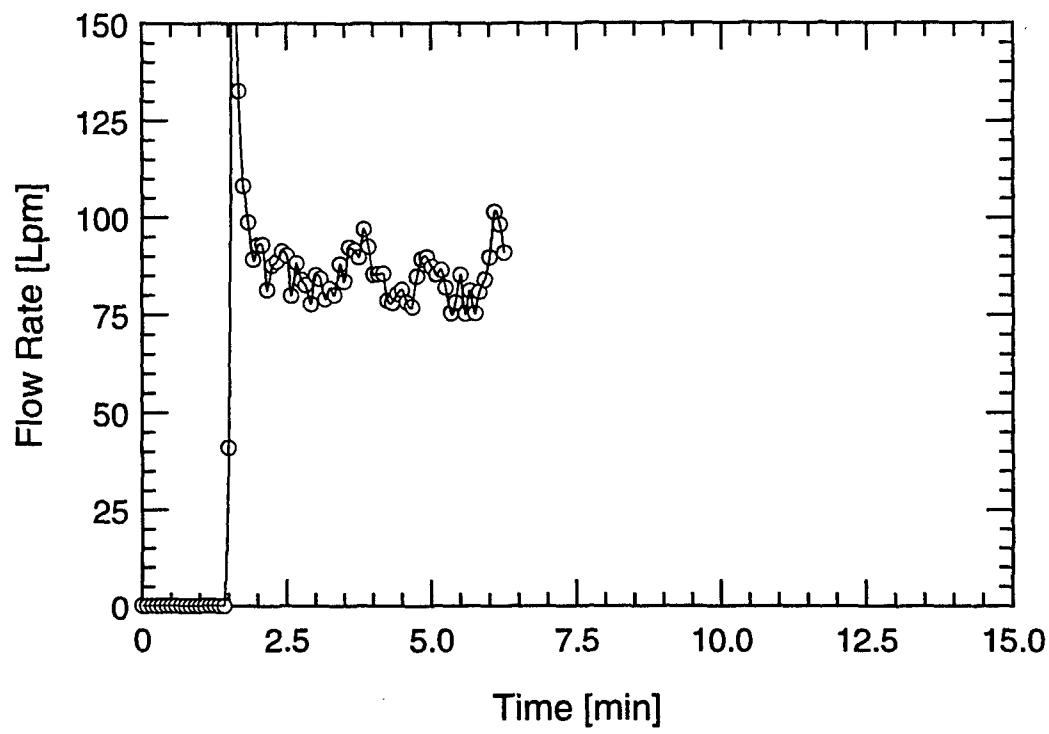
Forward Bulkhead

TEST #76

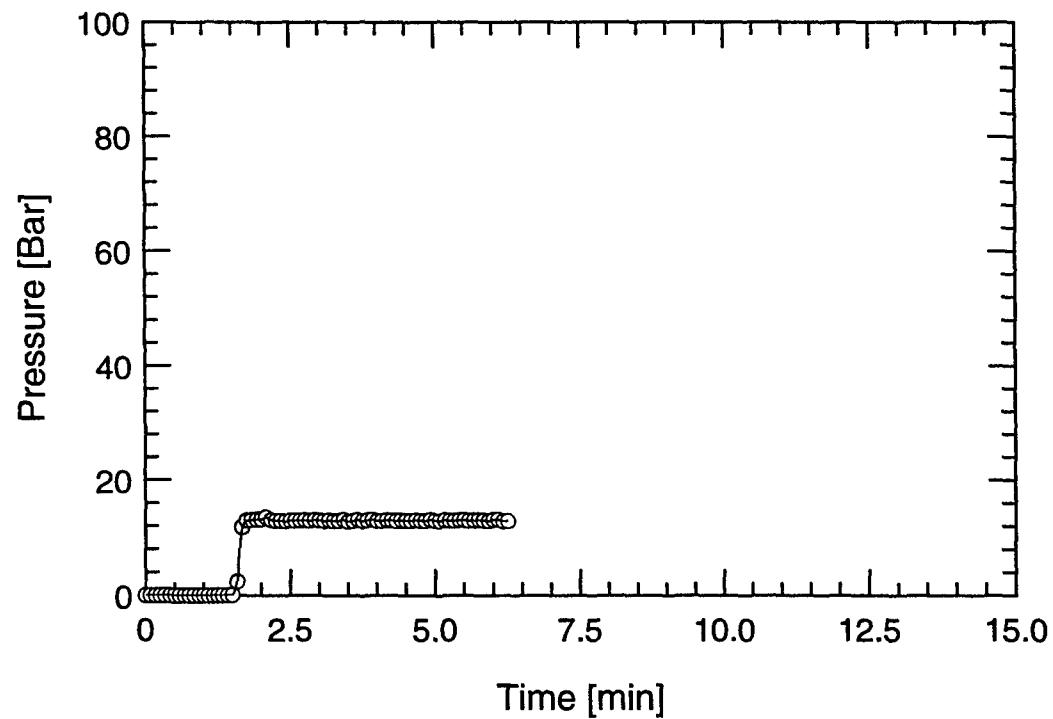


TEST #76

B-458



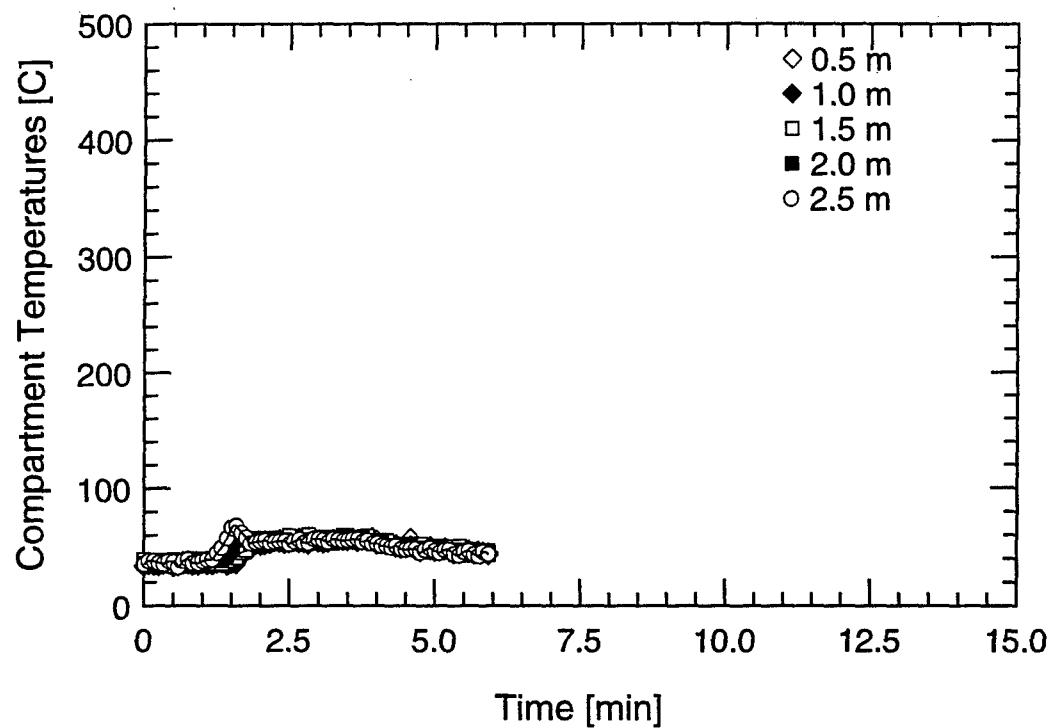
Water Mist System Flow Rate



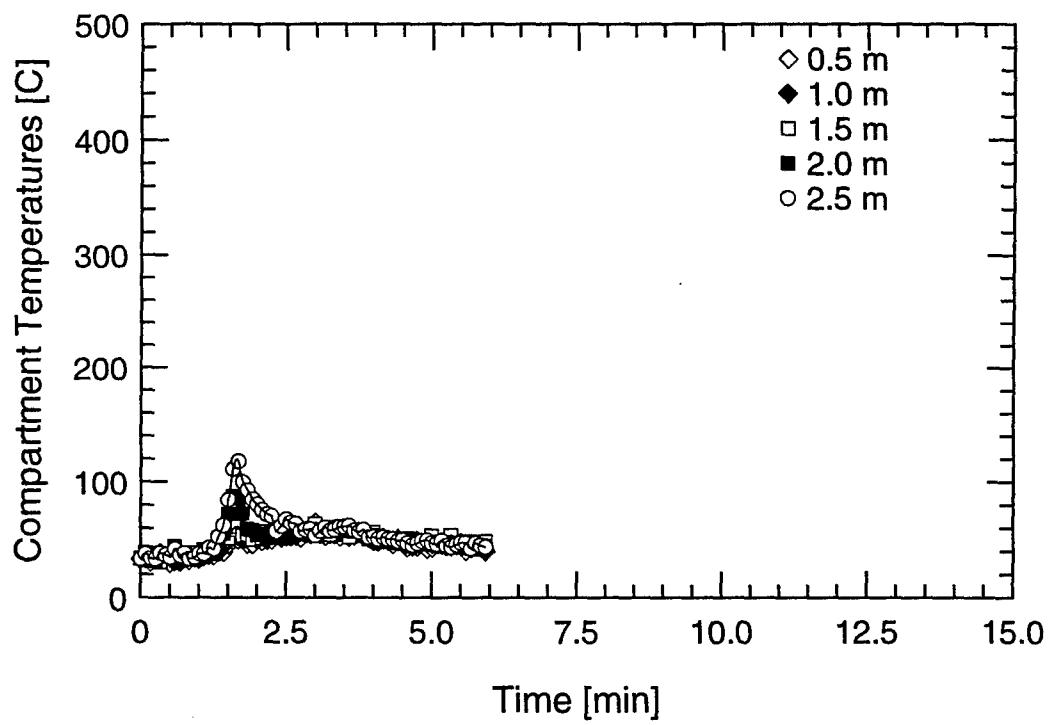
Water Mist System Pressure

TEST #76

B-459



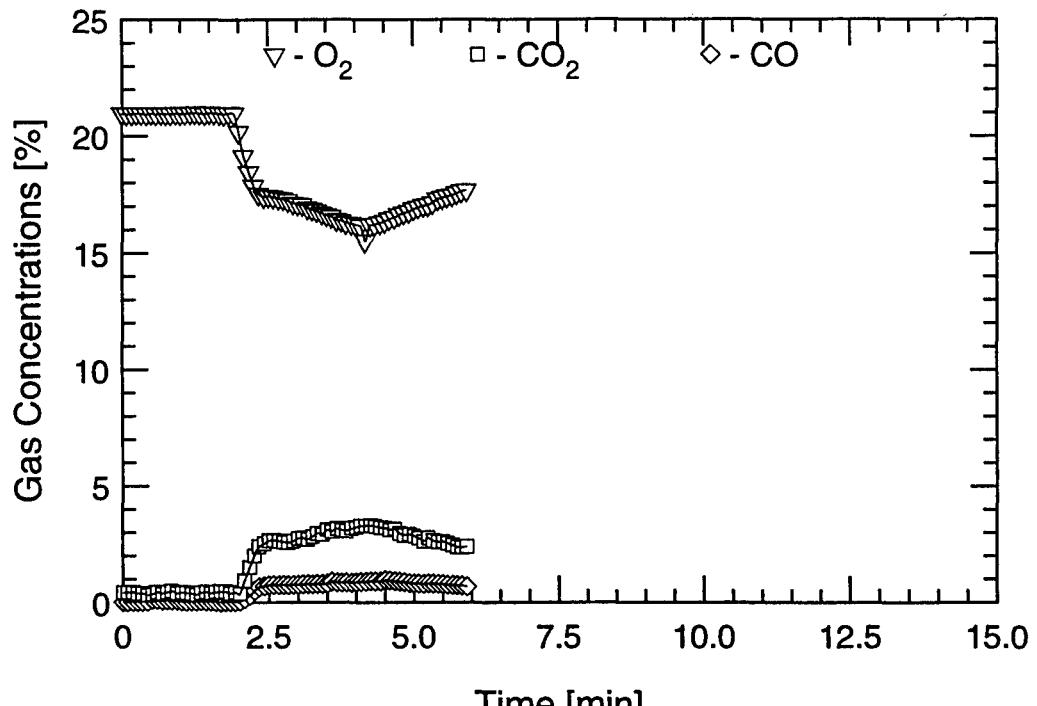
Aft Tree



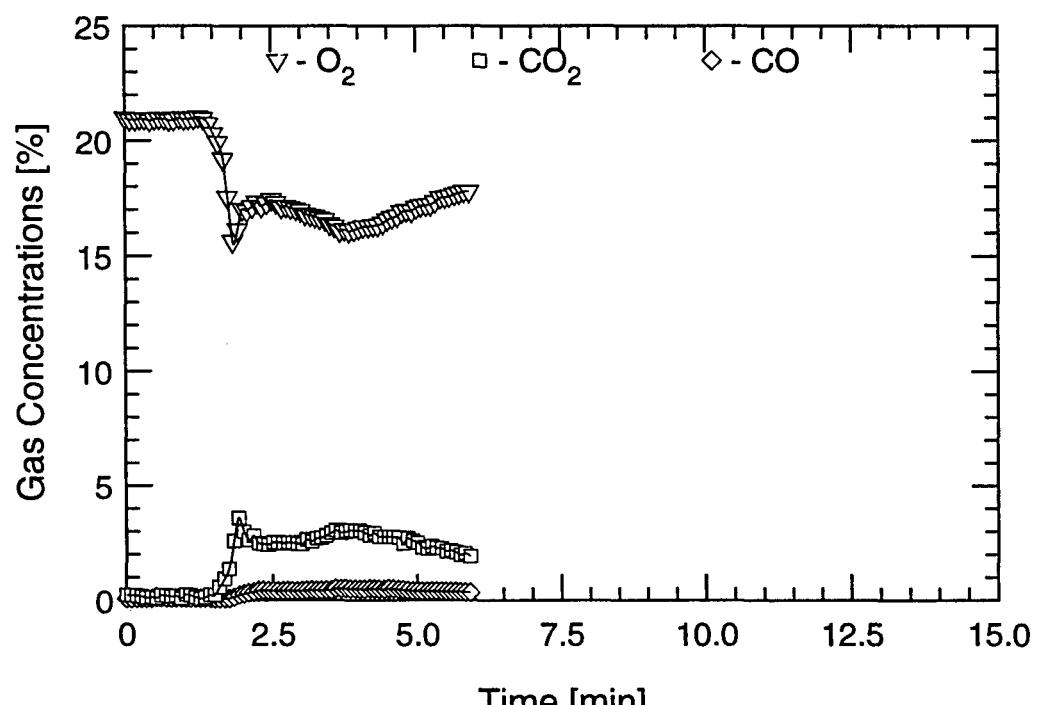
Forward Tree

TEST #77

B-460



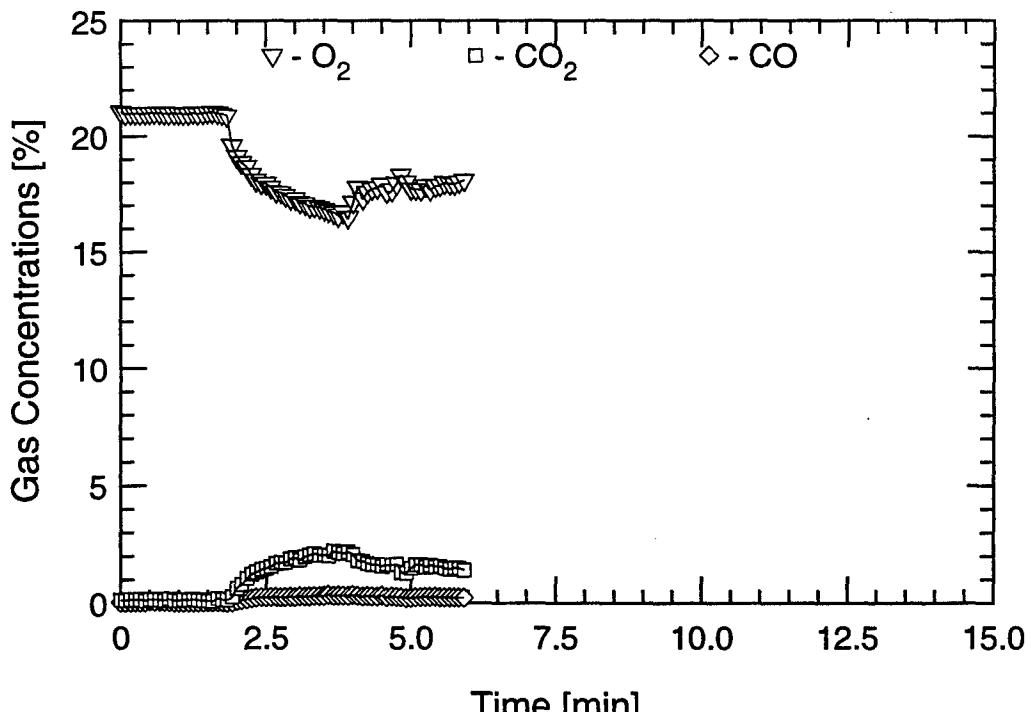
Aft Tree (Low)



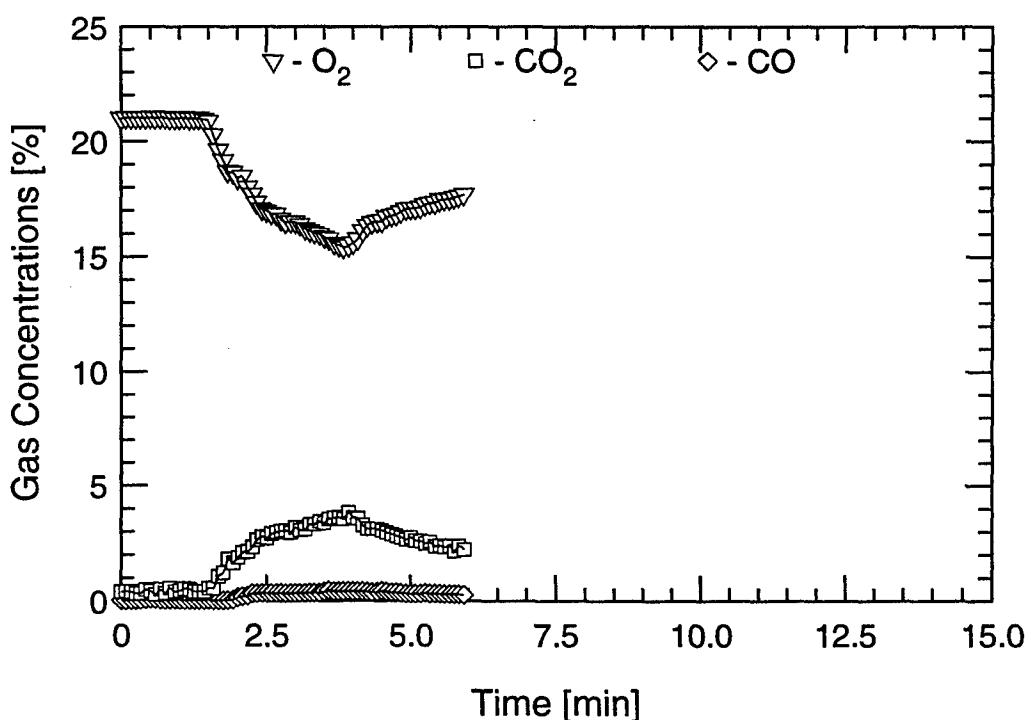
Aft Tree (High)

TEST #77

B-461



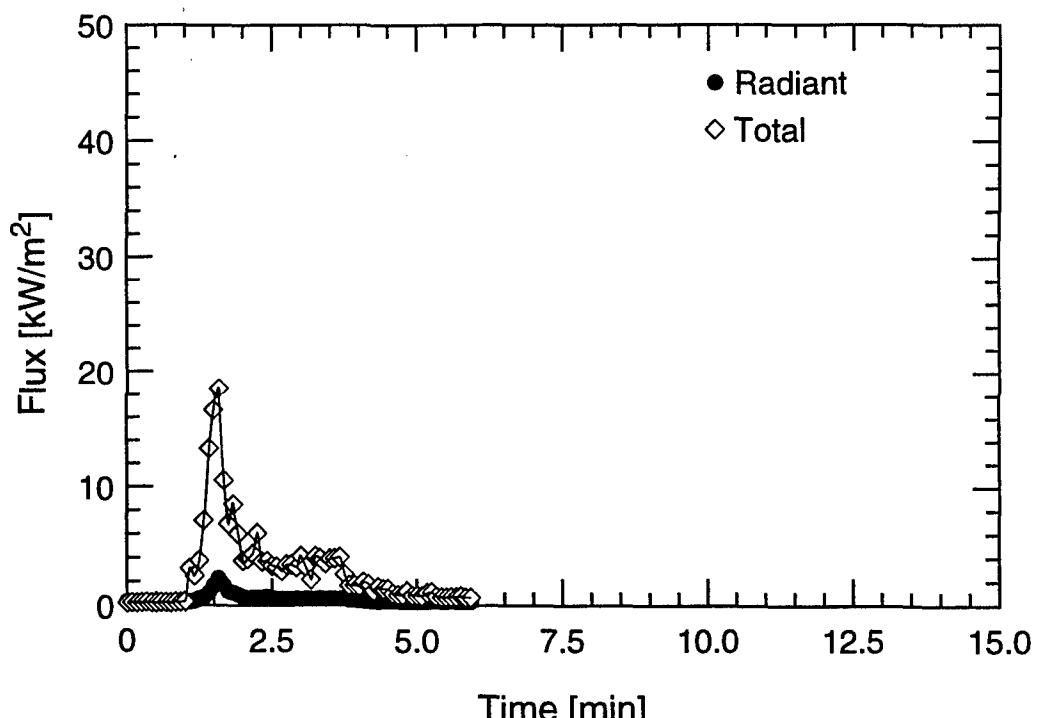
Forward Tree (Low)



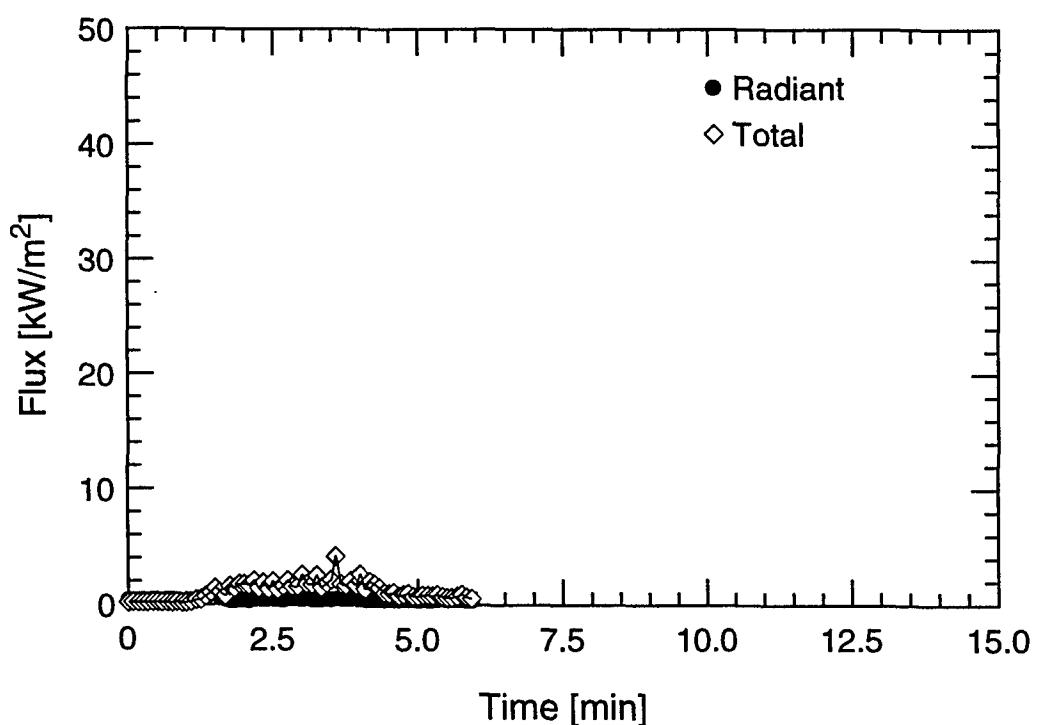
Forward Tree (High)

TEST #77

B-462



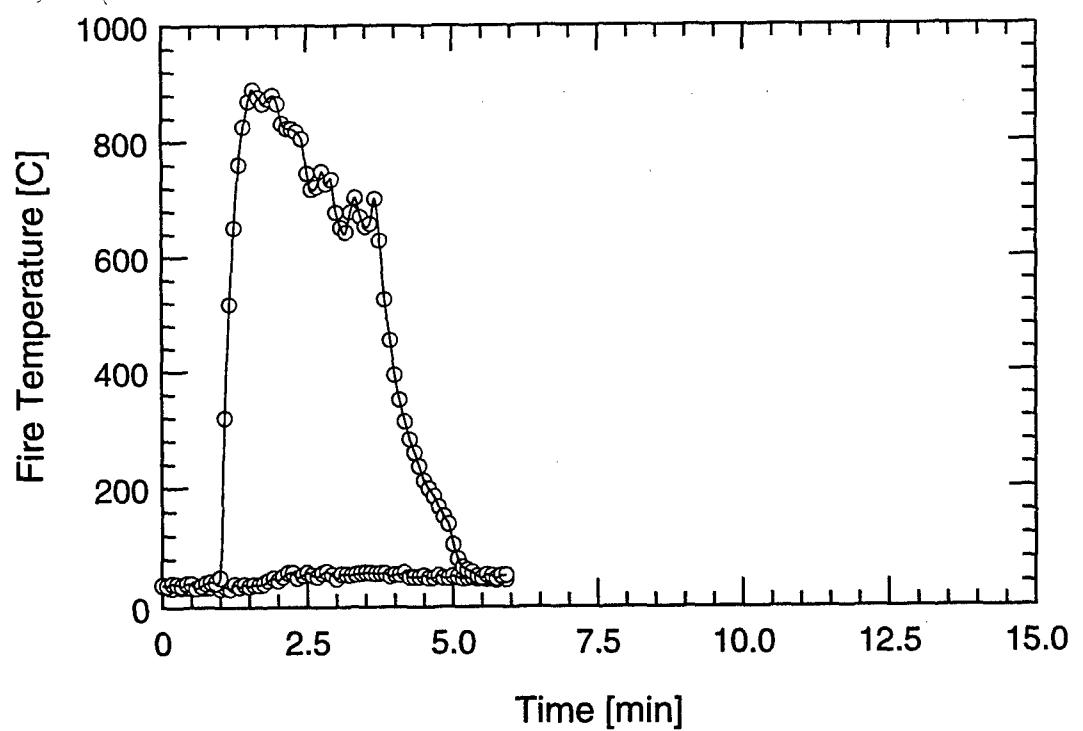
Overhead



Forward Bulkhead

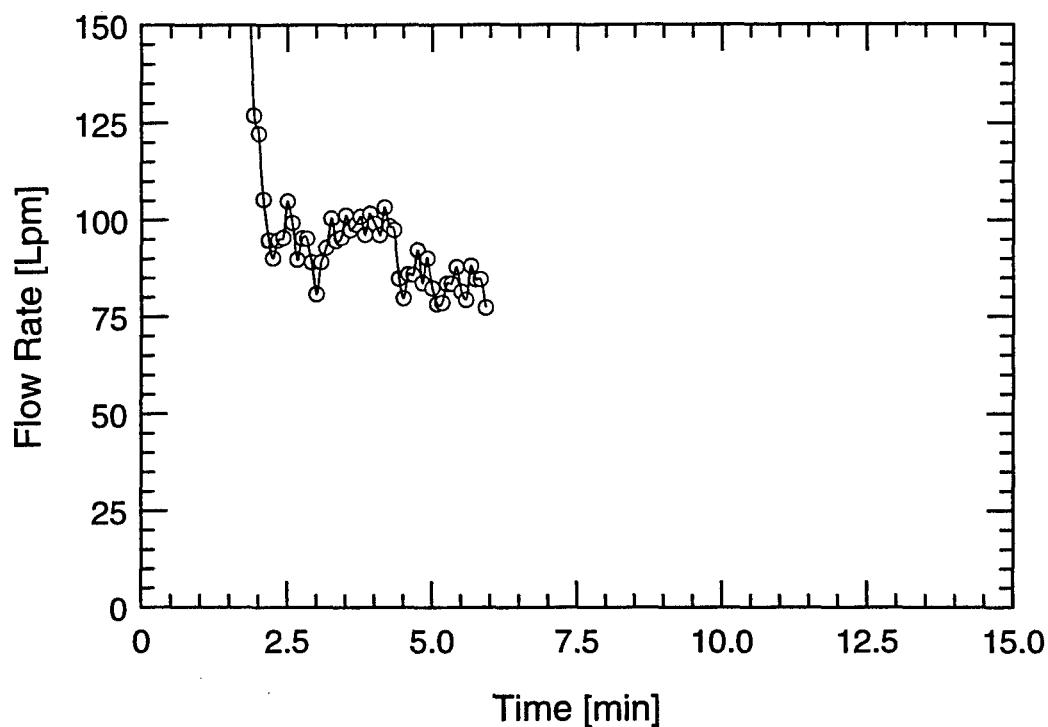
TEST #77

B-463

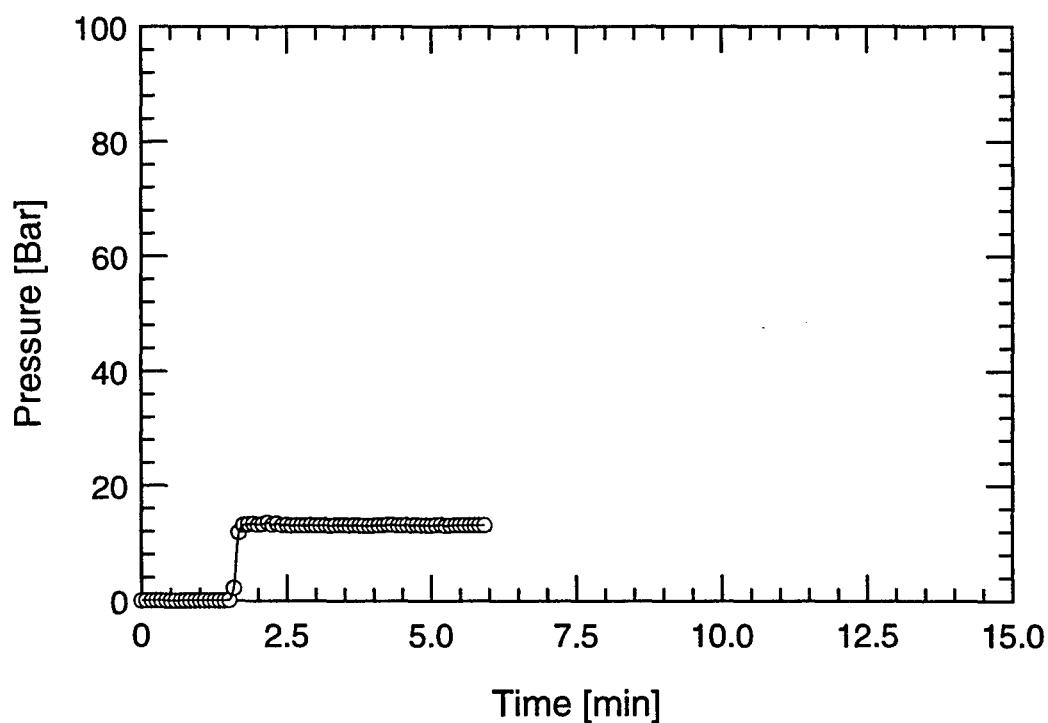


TEST #77

B-464



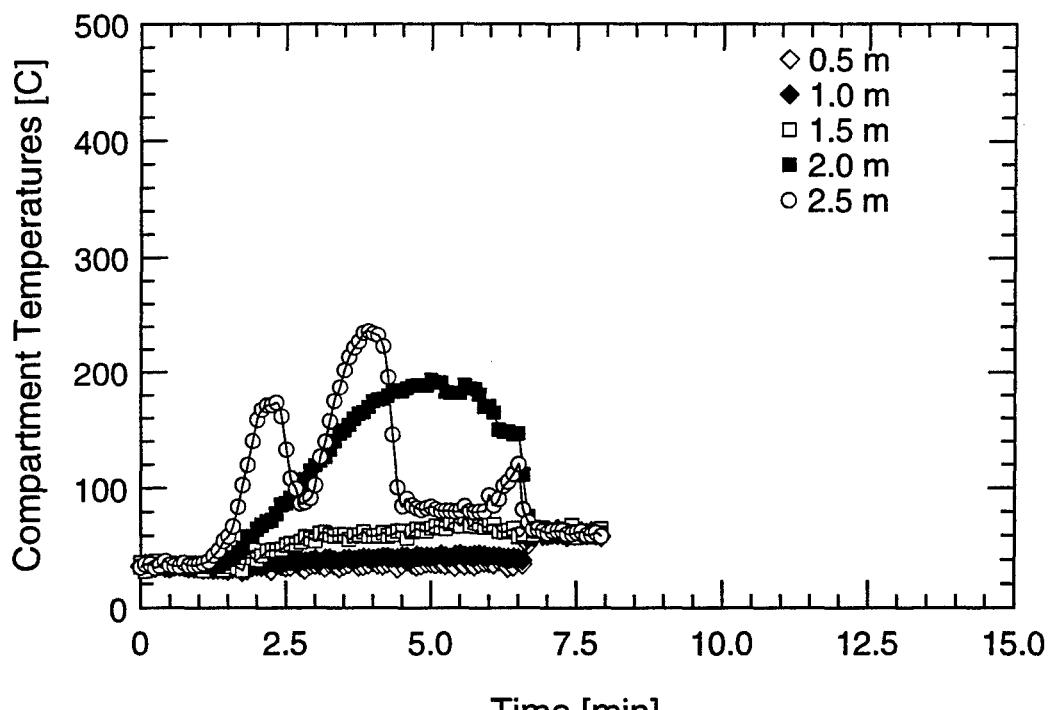
Water Mist System Flow Rate



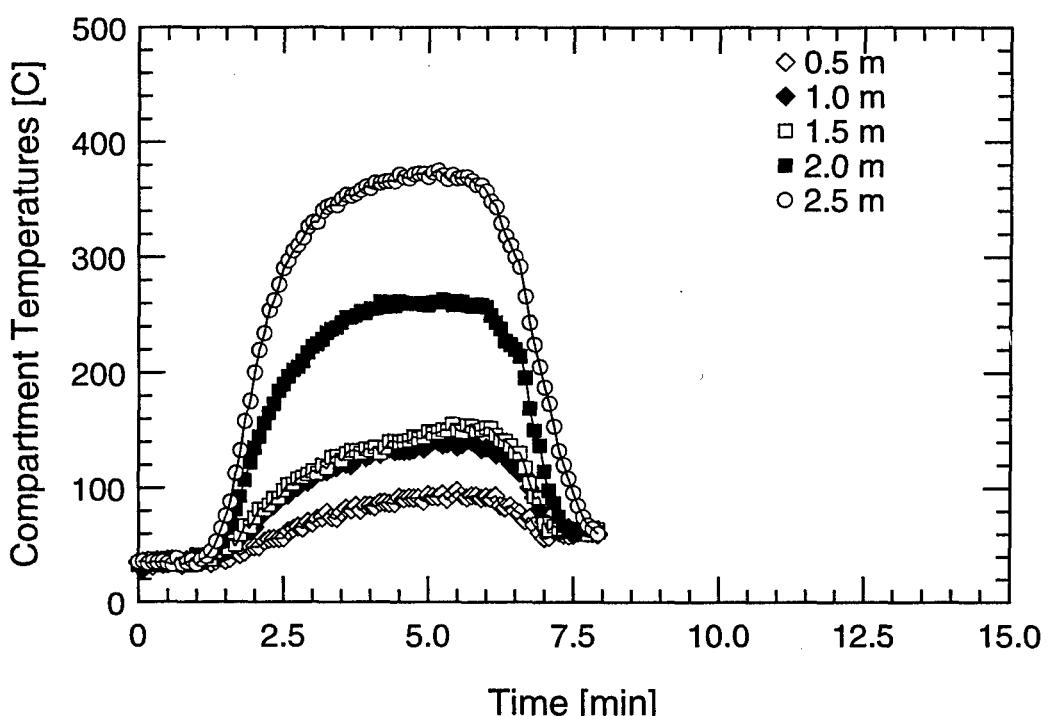
Water Mist System Pressure

TEST #77

B-465



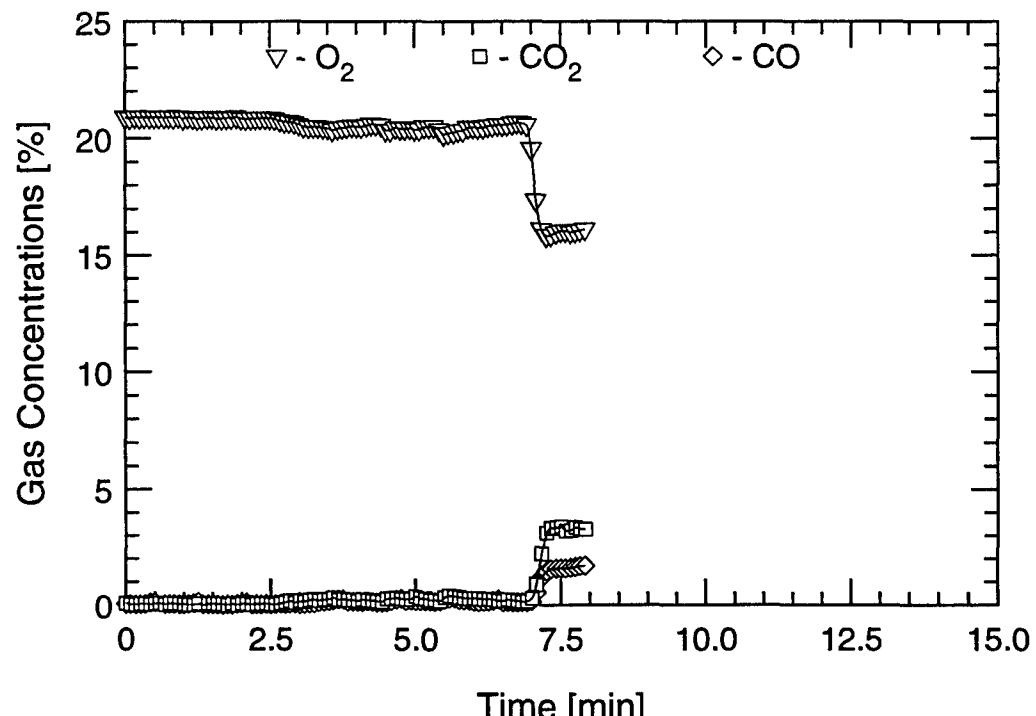
Aft Tree



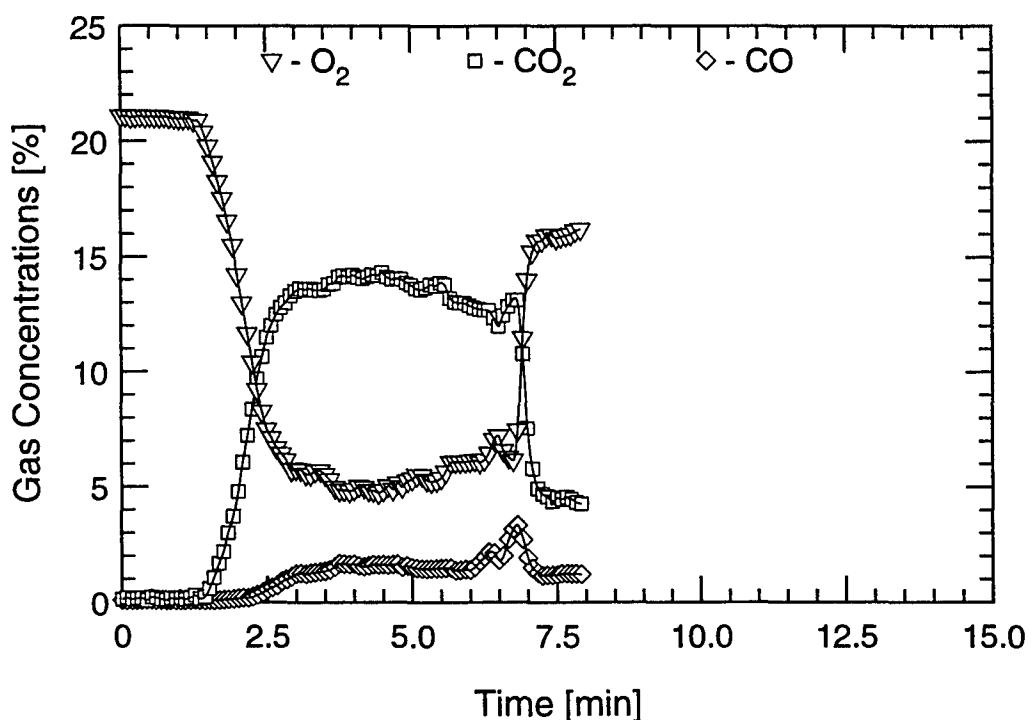
Forward Tree

TEST #78

B-466



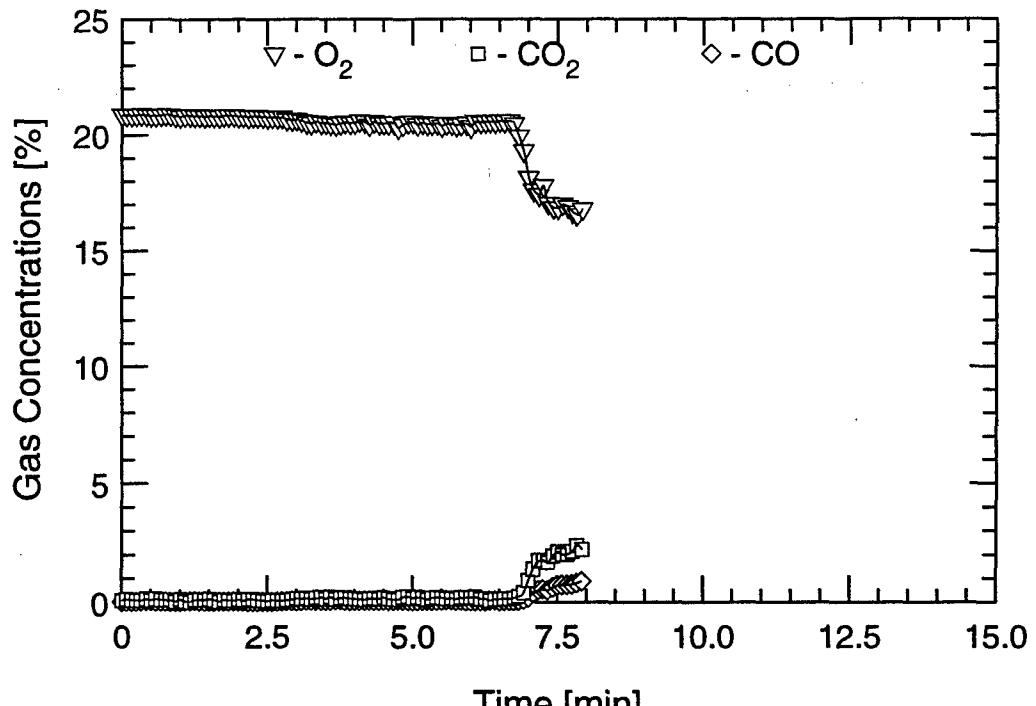
Aft Tree (Low)



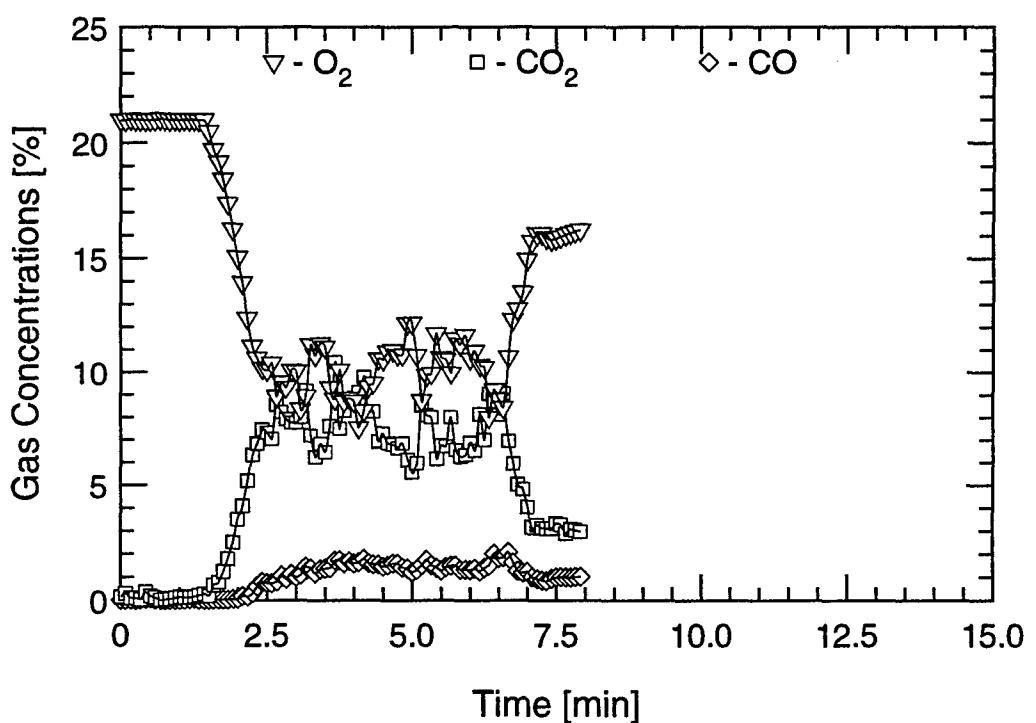
Aft Tree (High)

TEST #78

B-467



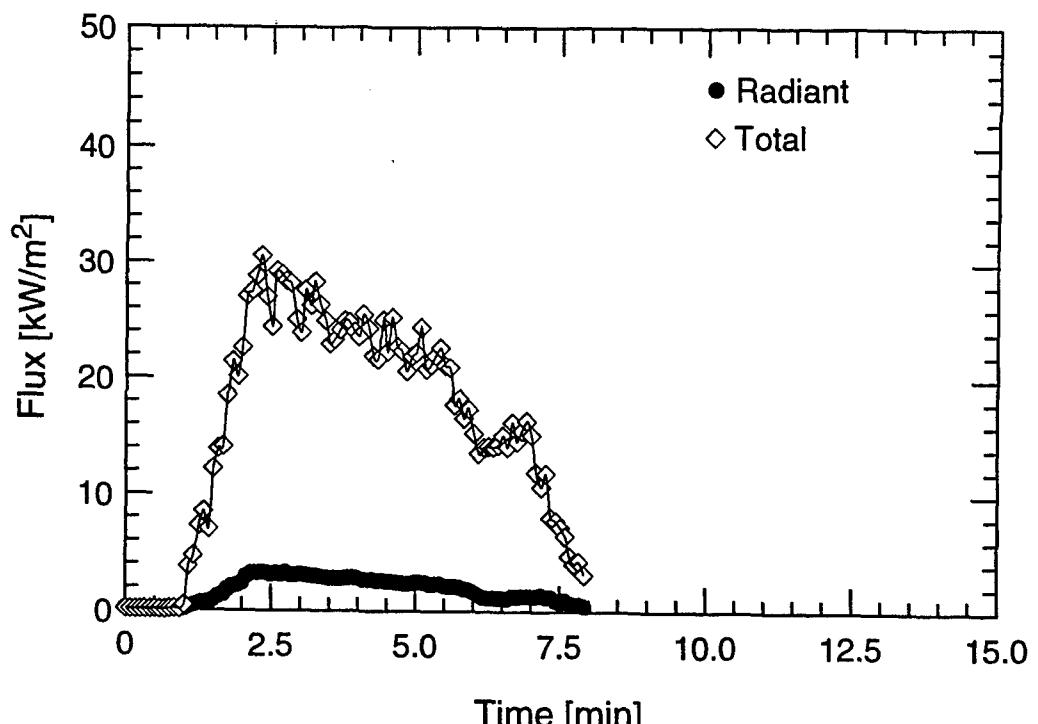
Forward Tree (Low)



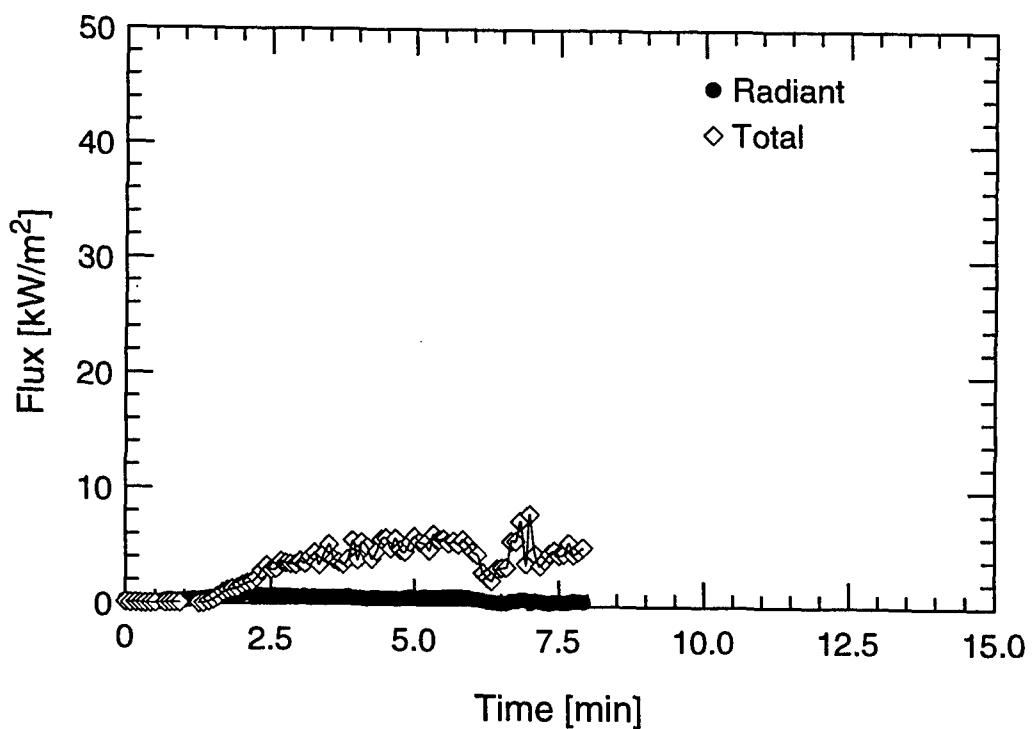
Forward Tree (High)

TEST #78

B-468



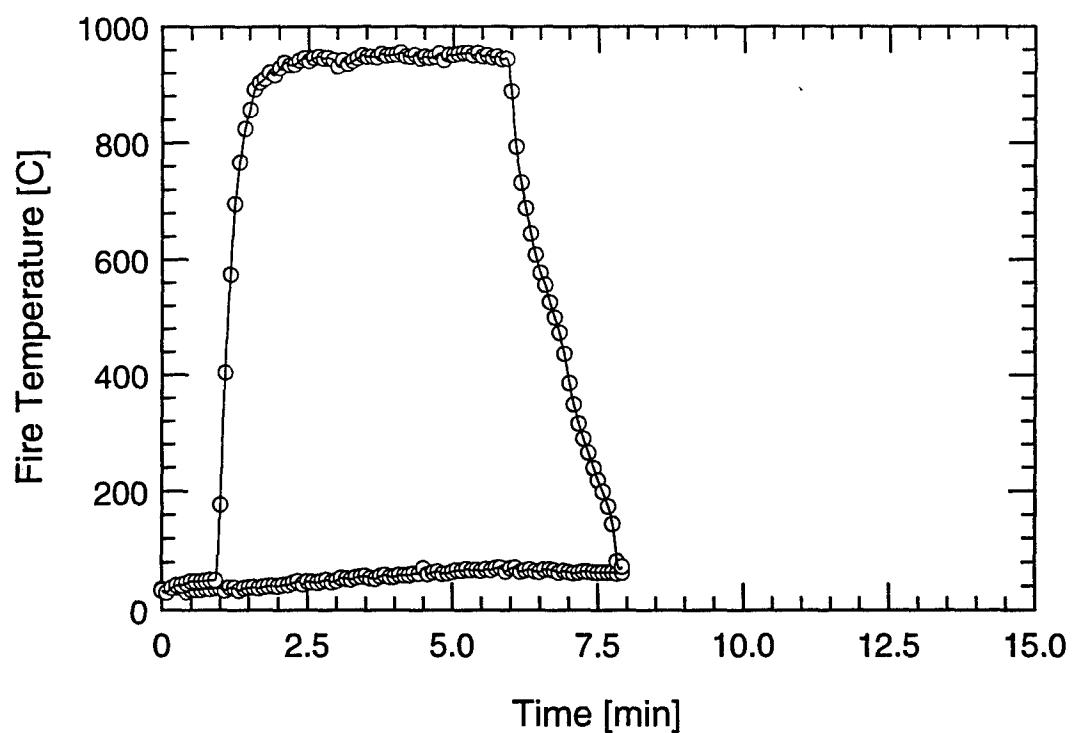
Overhead



Forward Bulkhead

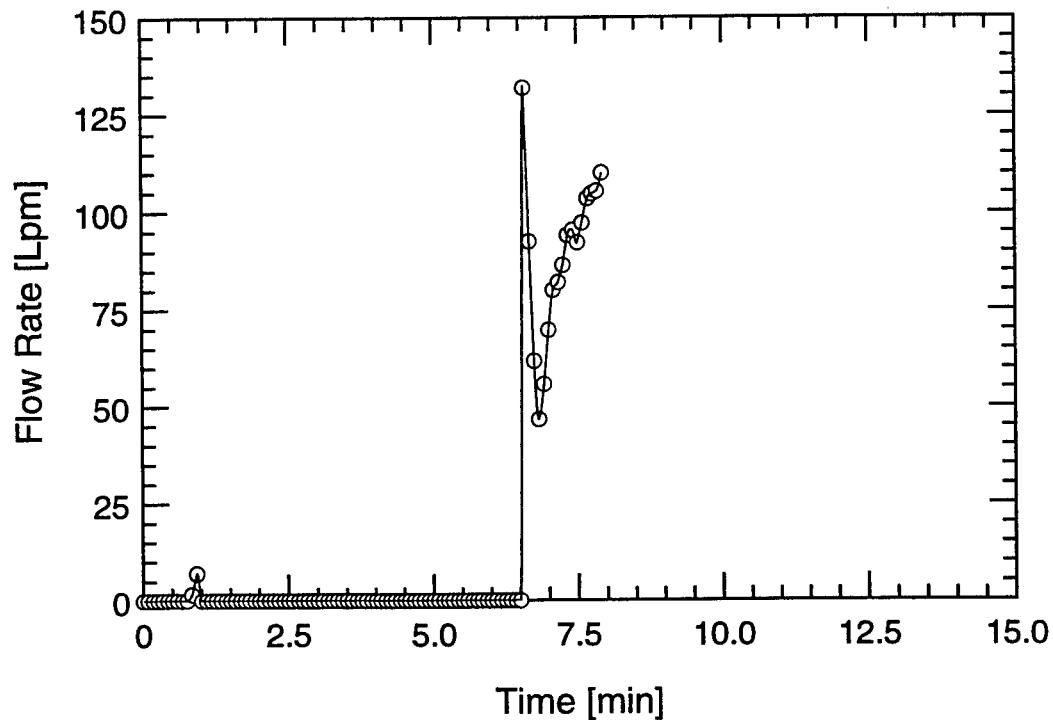
TEST #78

B-469

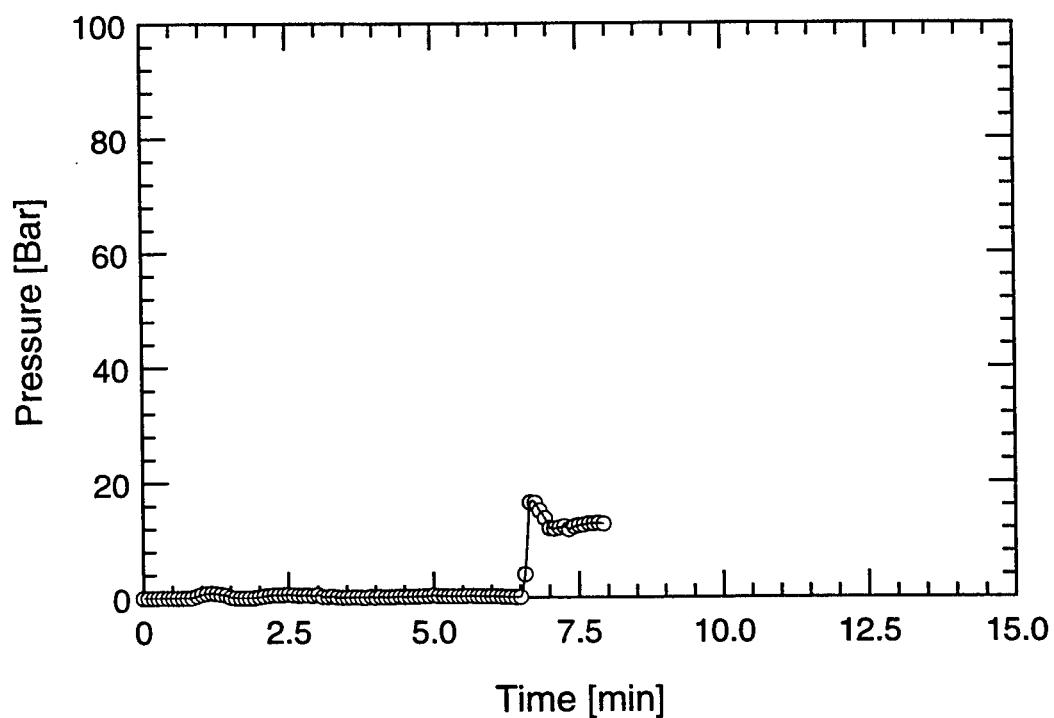


TEST #78

B-470



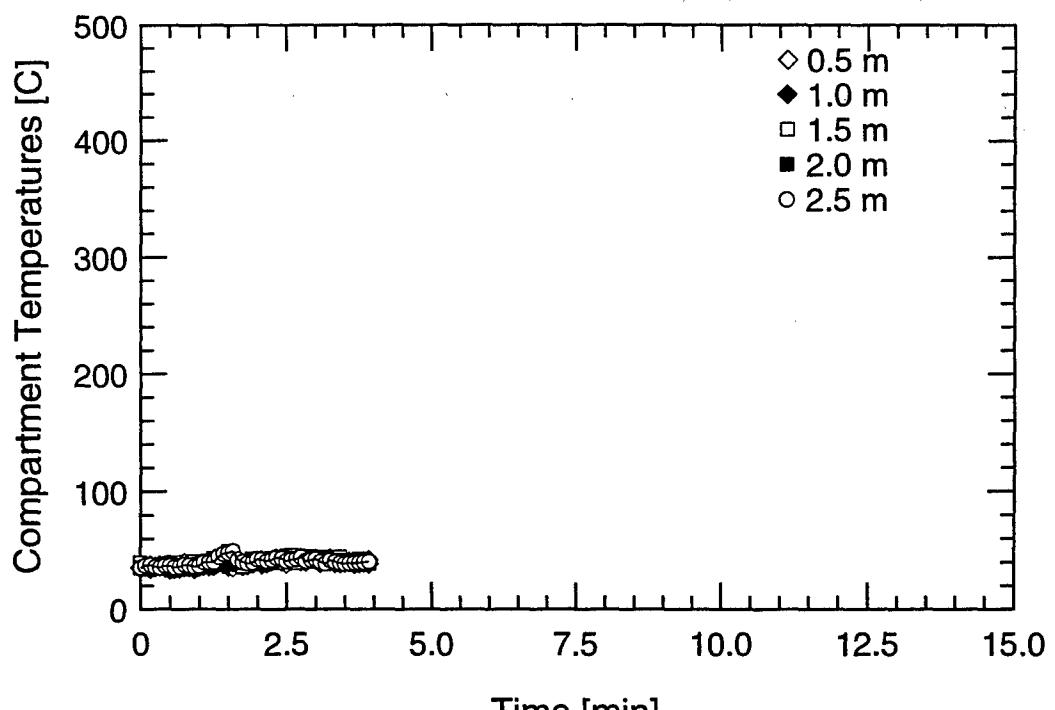
Water Mist System Flow Rate



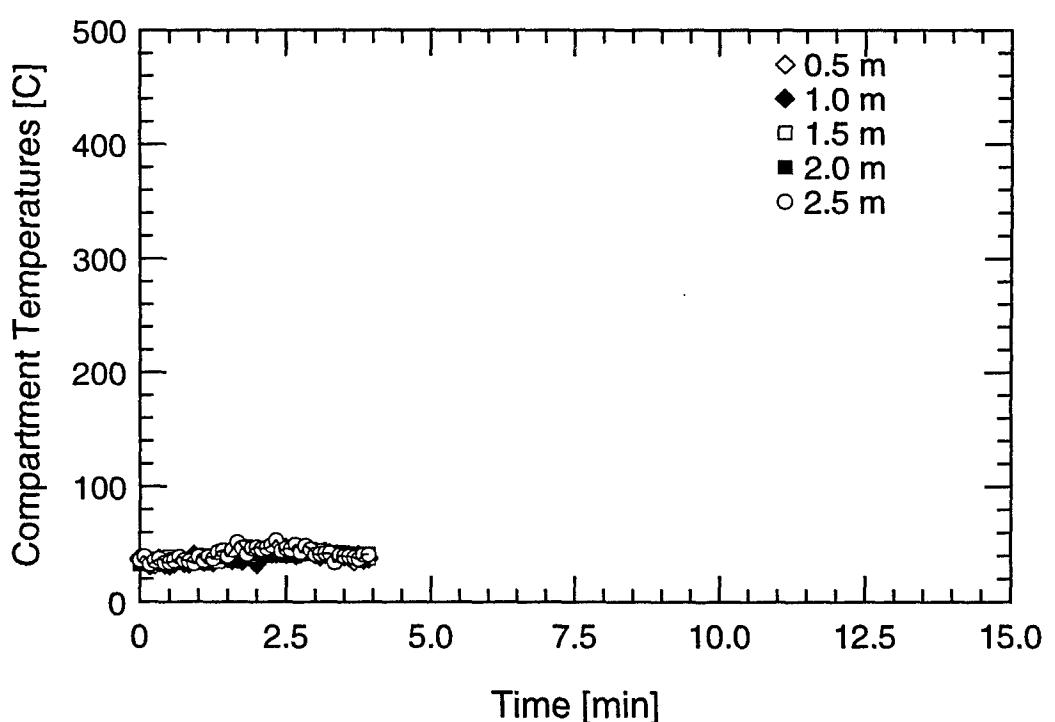
Water Mist System Pressure

TEST #78

B-471



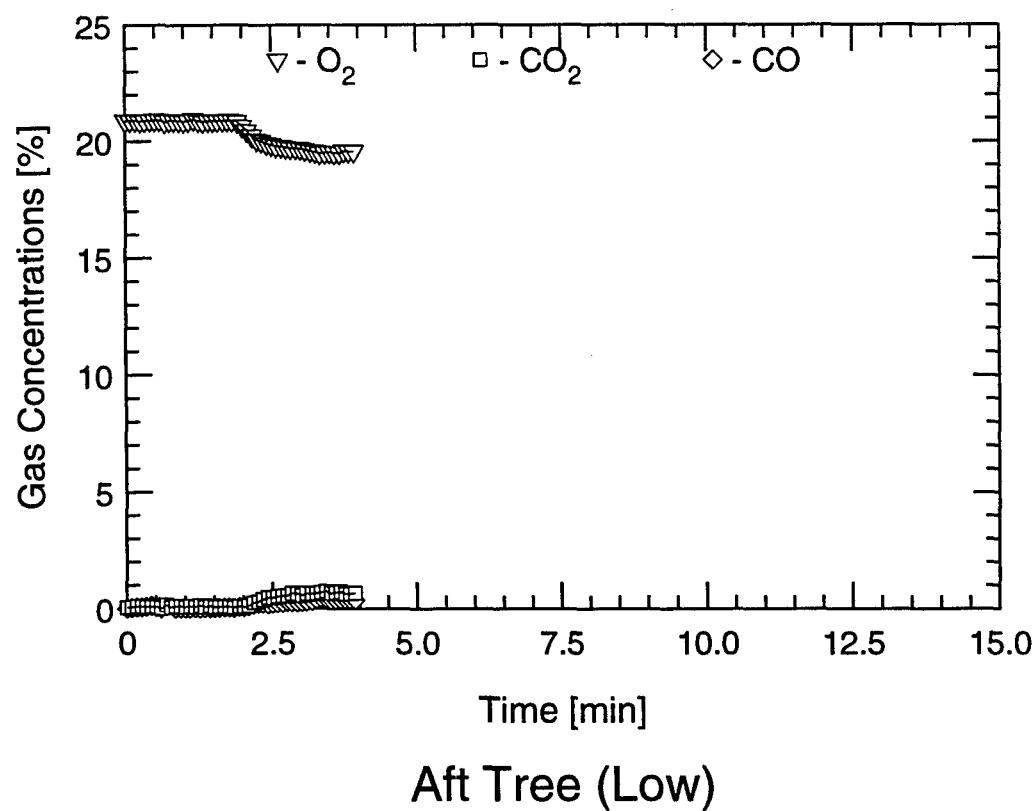
Aft Tree



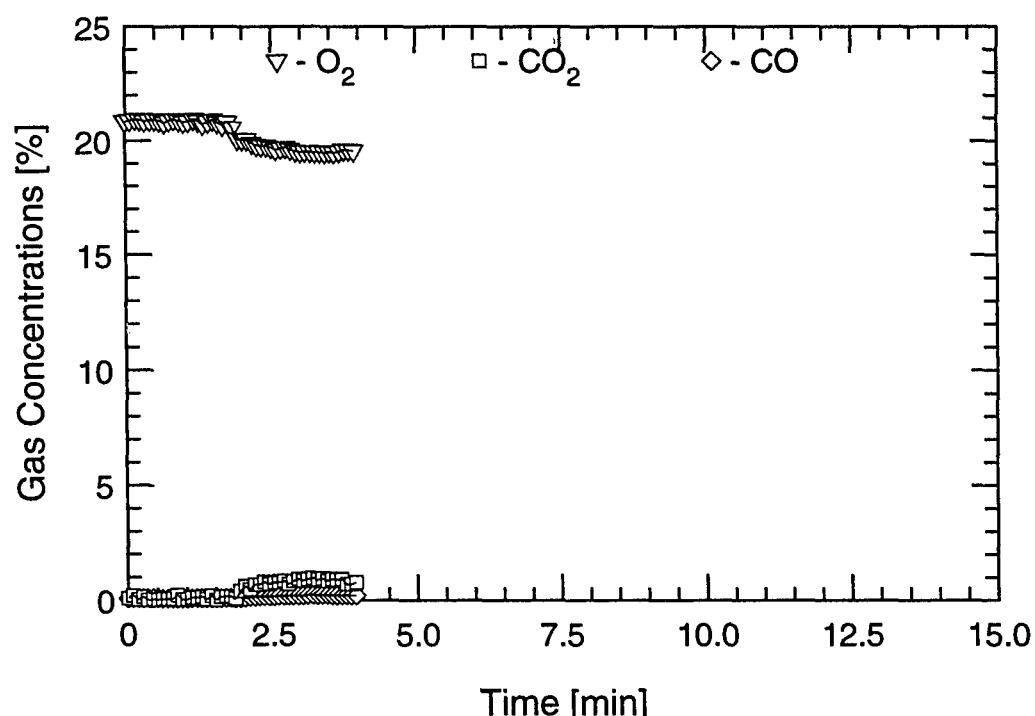
Forward Tree

TEST #79

B-472



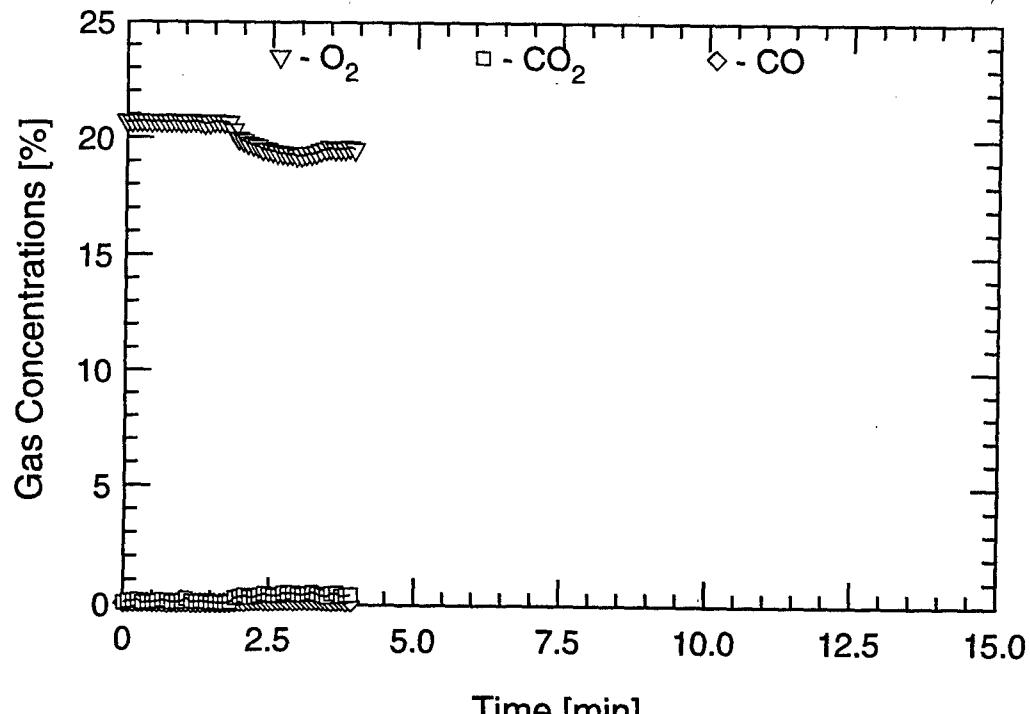
Aft Tree (Low)



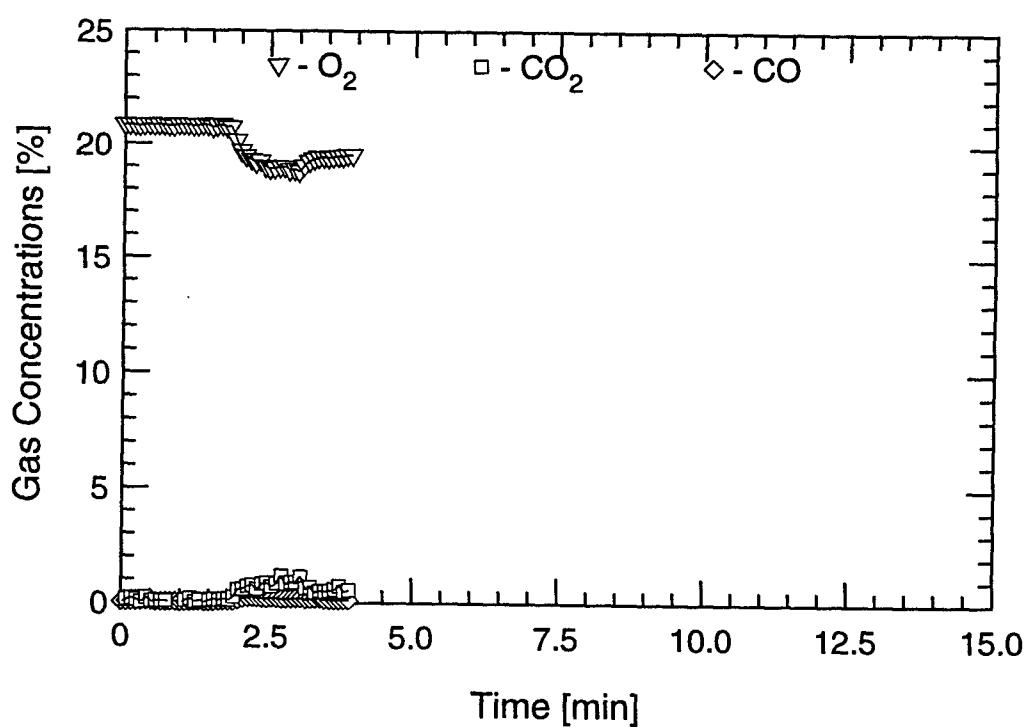
Aft Tree (High)

TEST #79

B-473



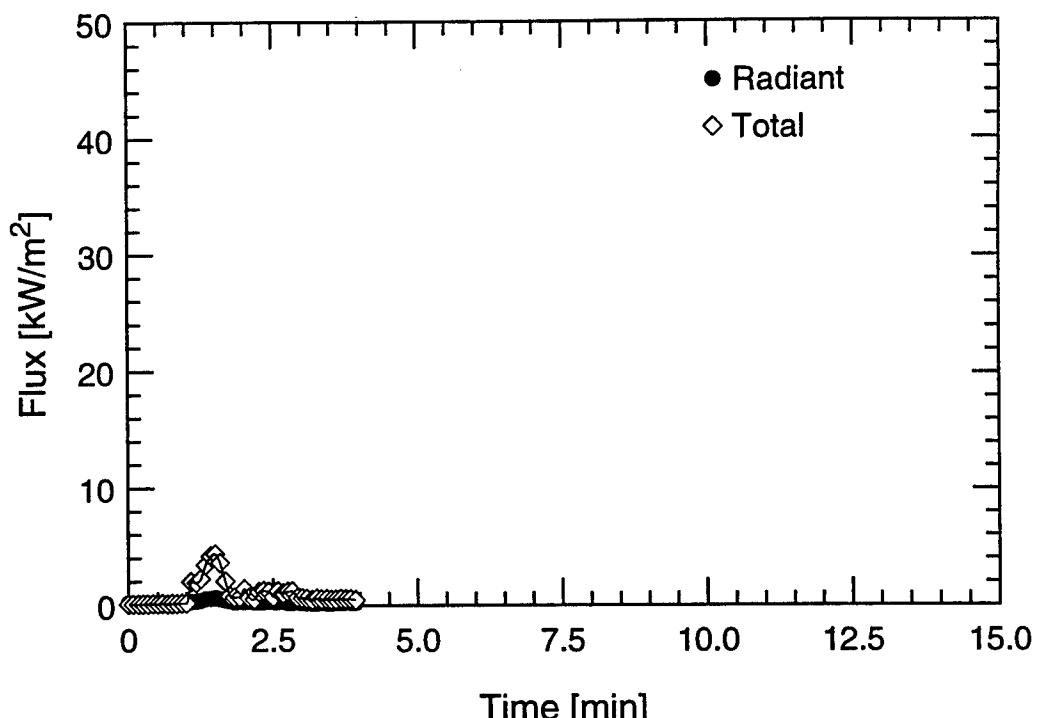
Forward Tree (Low)



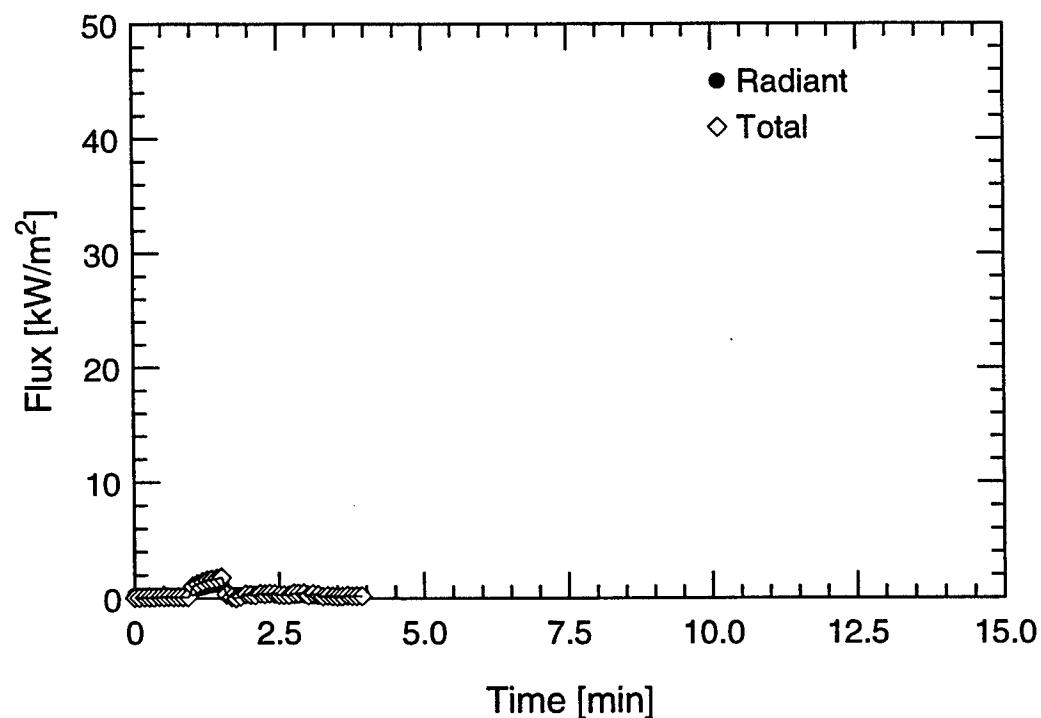
Forward Tree (High)

TEST #79

B-474



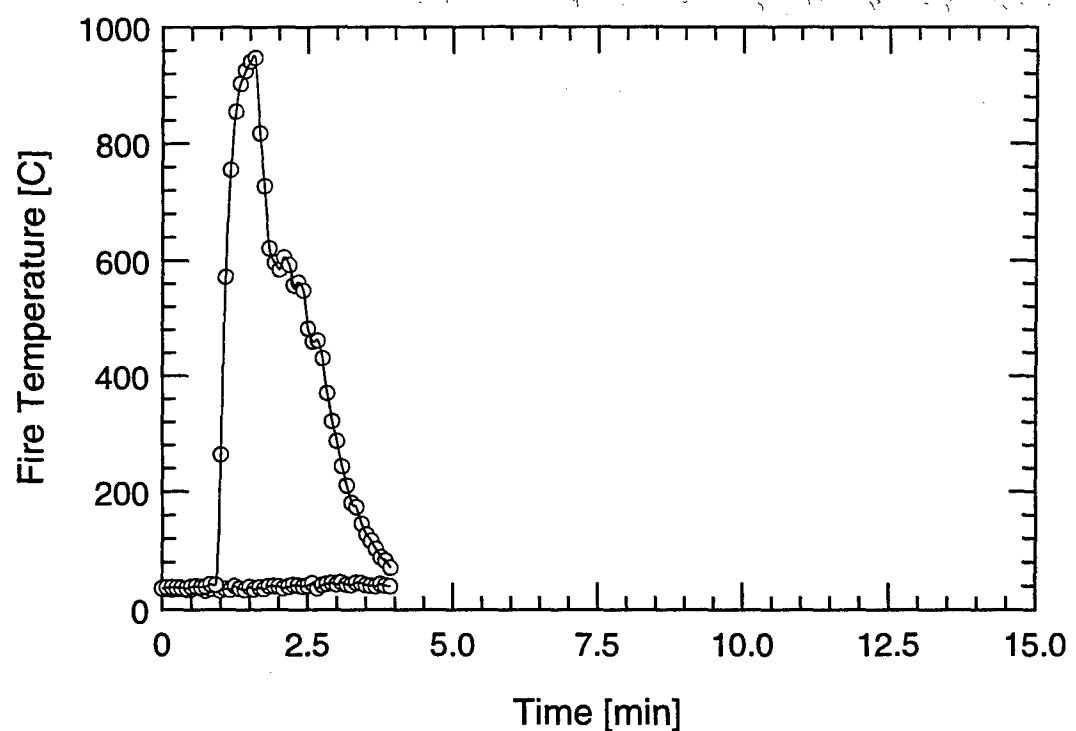
Overhead



Forward Bulkhead

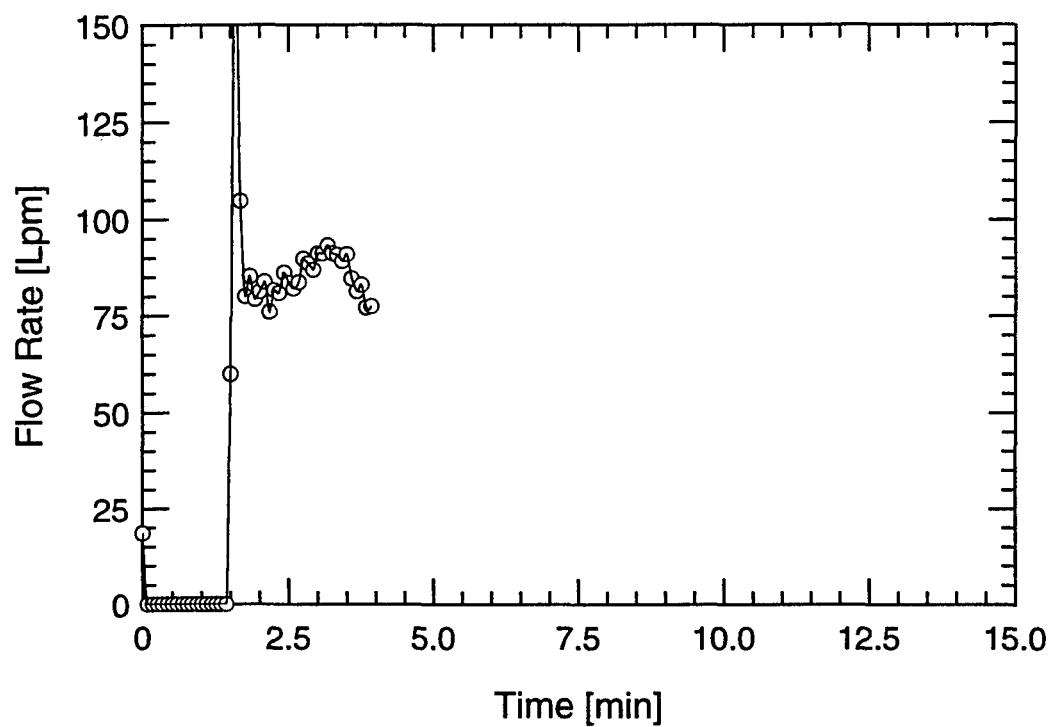
TEST #79

B-475

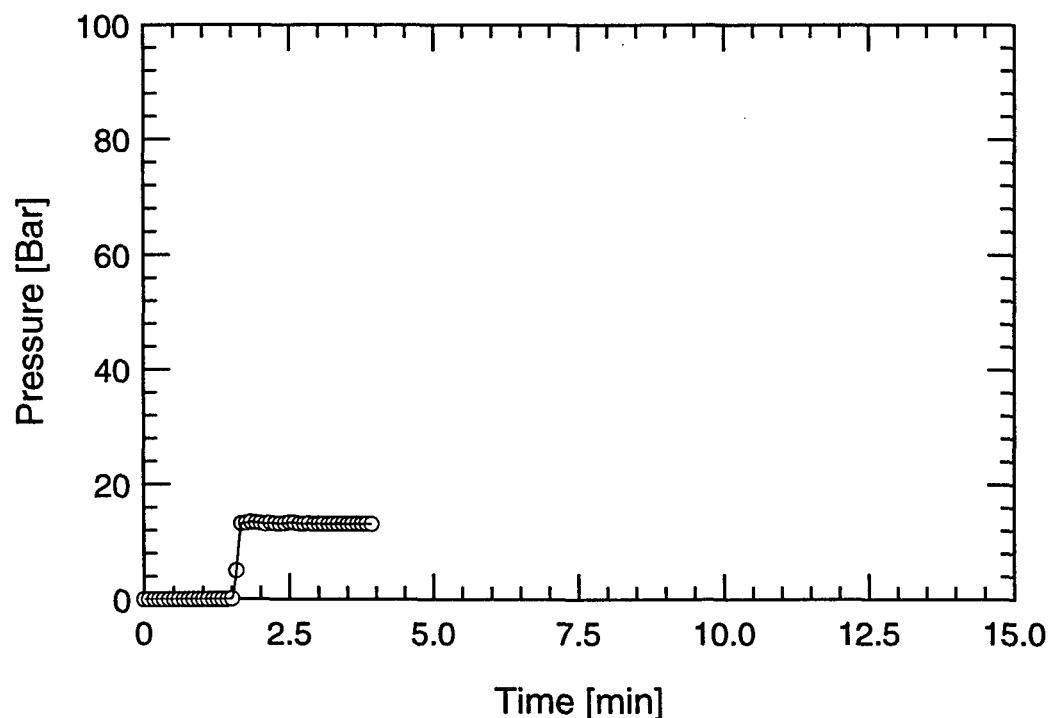


TEST #79

B-476



Water Mist System Flow Rate



Water Mist System Pressure

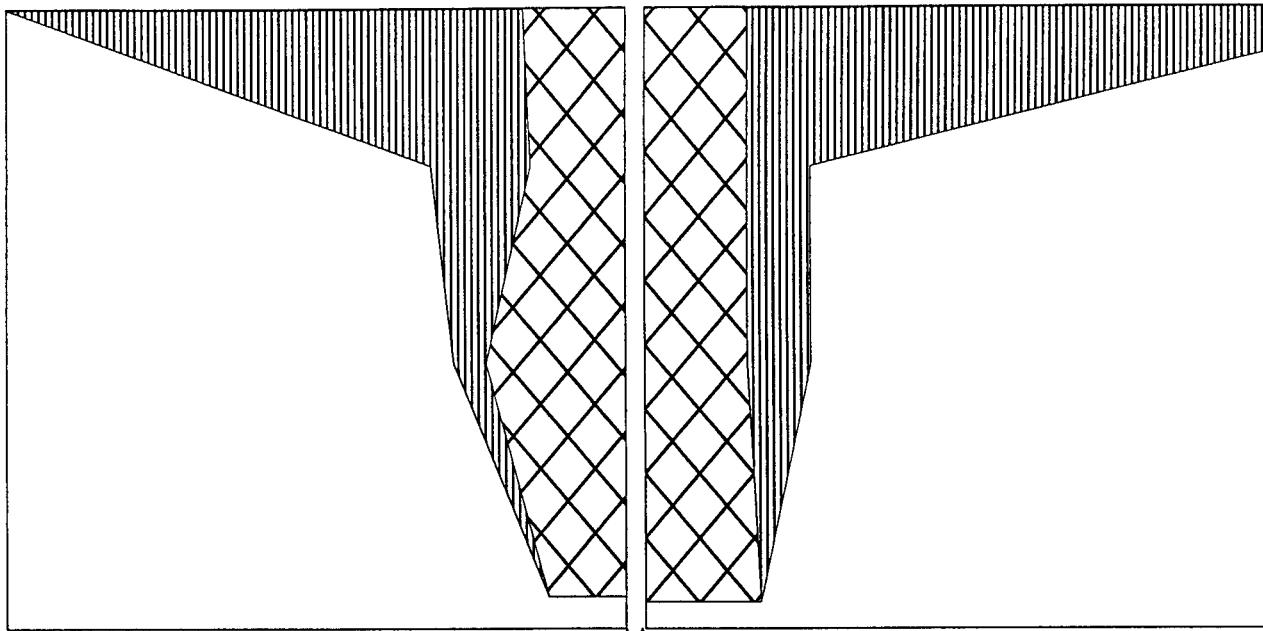
TEST #79

B-477

APPENDIX C – COMBUSTIBLE BOUNDARY TEST DATA

Table of Contents

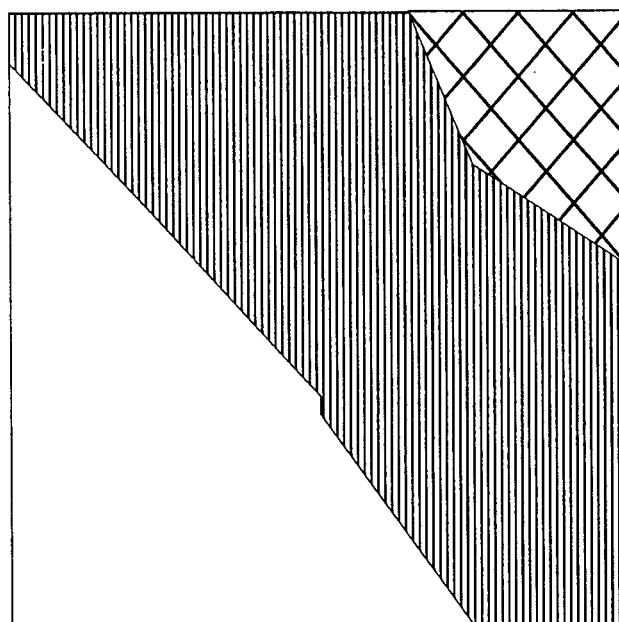
Test #	Water Mist System	Fire Scenario	Ventilation Condition	Page #
71	Navy	Corner - Plywood	1.7 m ² Vent	C-3
72	Navy	Corner - Fiberglass	1.7 m ² Vent	C-4
73	Fogtech DK6	Corner - Plywood	1.7 m ² Vent	C-5
74	Fogtech DK6	Corner - Fiberglass	1.7 m ² Vent	C-6
75	Grinnell AM4	Corner - Plywood	1.7 m ² Vent	C-7
76	Test Aborted			-
77	Grinnell AM4	Corner - Fiberglass	1.7 m ² Vent	C-8
78	Free	Corner - Plywood	1.7 m ² Vent	C-9
79	Grinnell AM4	Overhead - Plywood	1.7 m ² Vent	C-11



FORWARD
BULKHEAD

SOURCE
FIRE

STARBOARD
BULKHEAD
SOURCE
FIRE



OVERHEAD*



BLISTERING/BROWNING

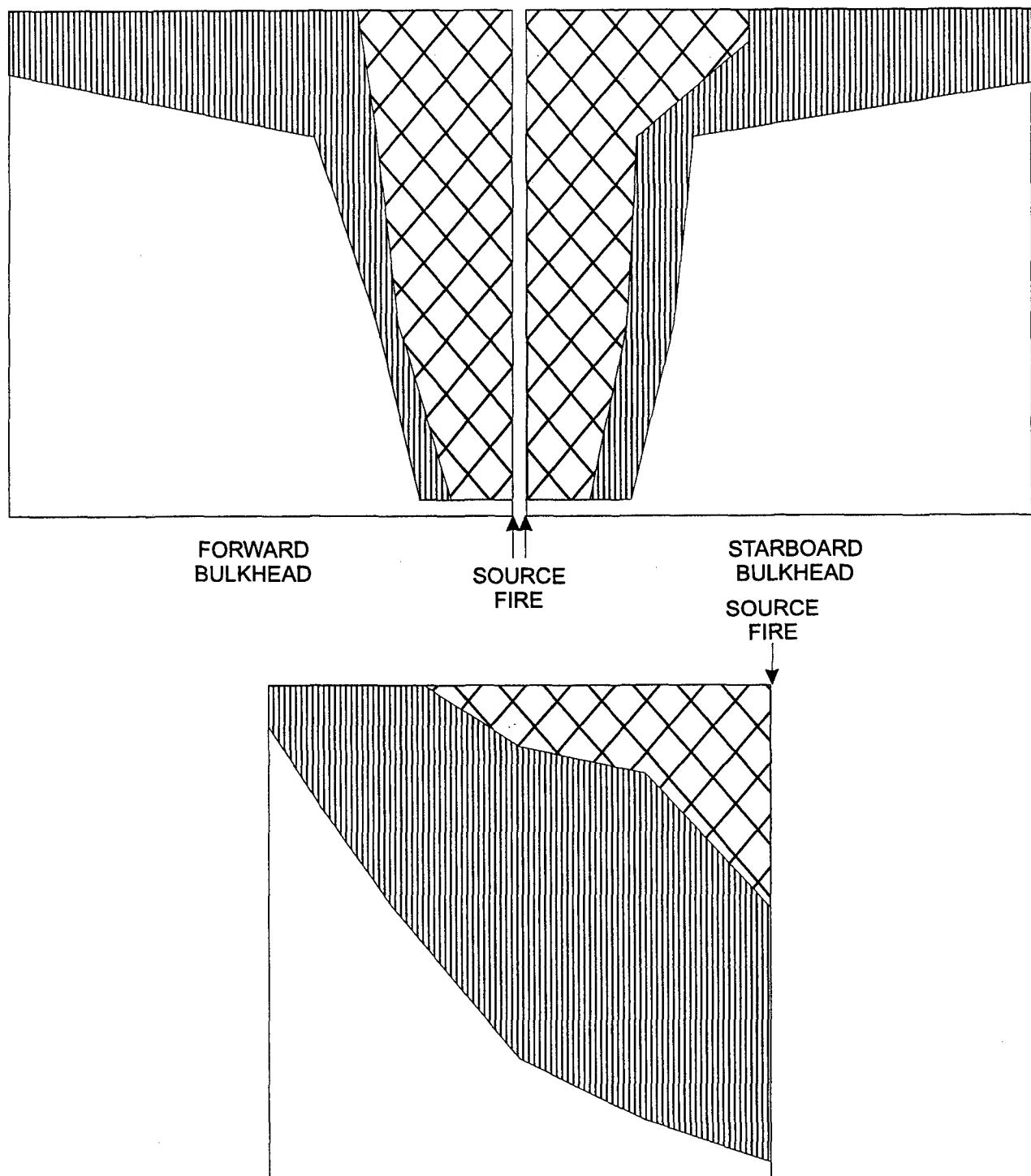


CHARRING

*Note: Overhead covered with soot

Test #71

C-3



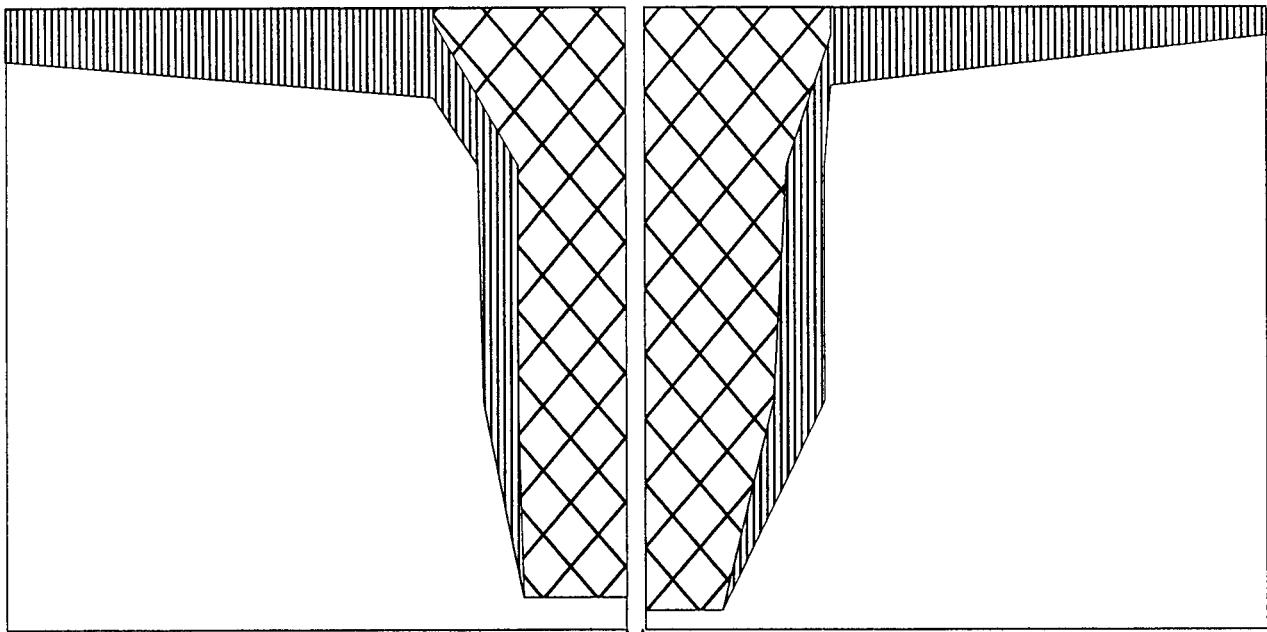
BLISTERING/BROWNING

CHARRING

*Note: Overhead covered with soot

Test #72

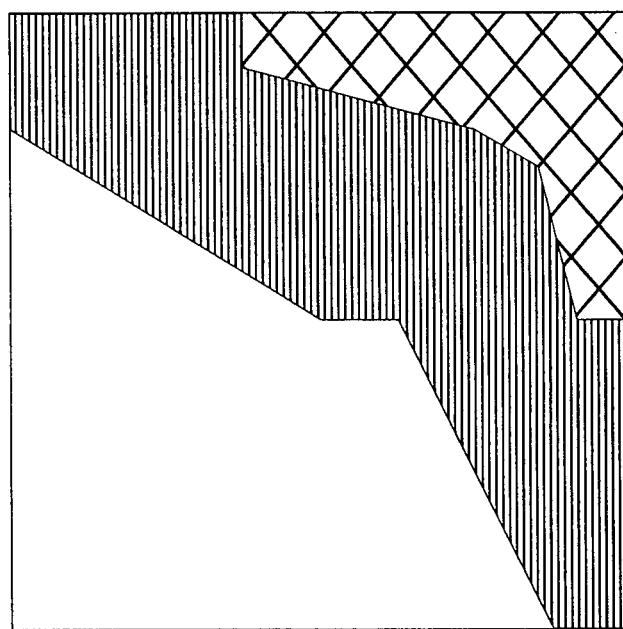
C-4



FORWARD
BULKHEAD

SOURCE
FIRE

STARBOARD
BULKHEAD
SOURCE
FIRE



OVERHEAD*



BLISTERING/BROWNING

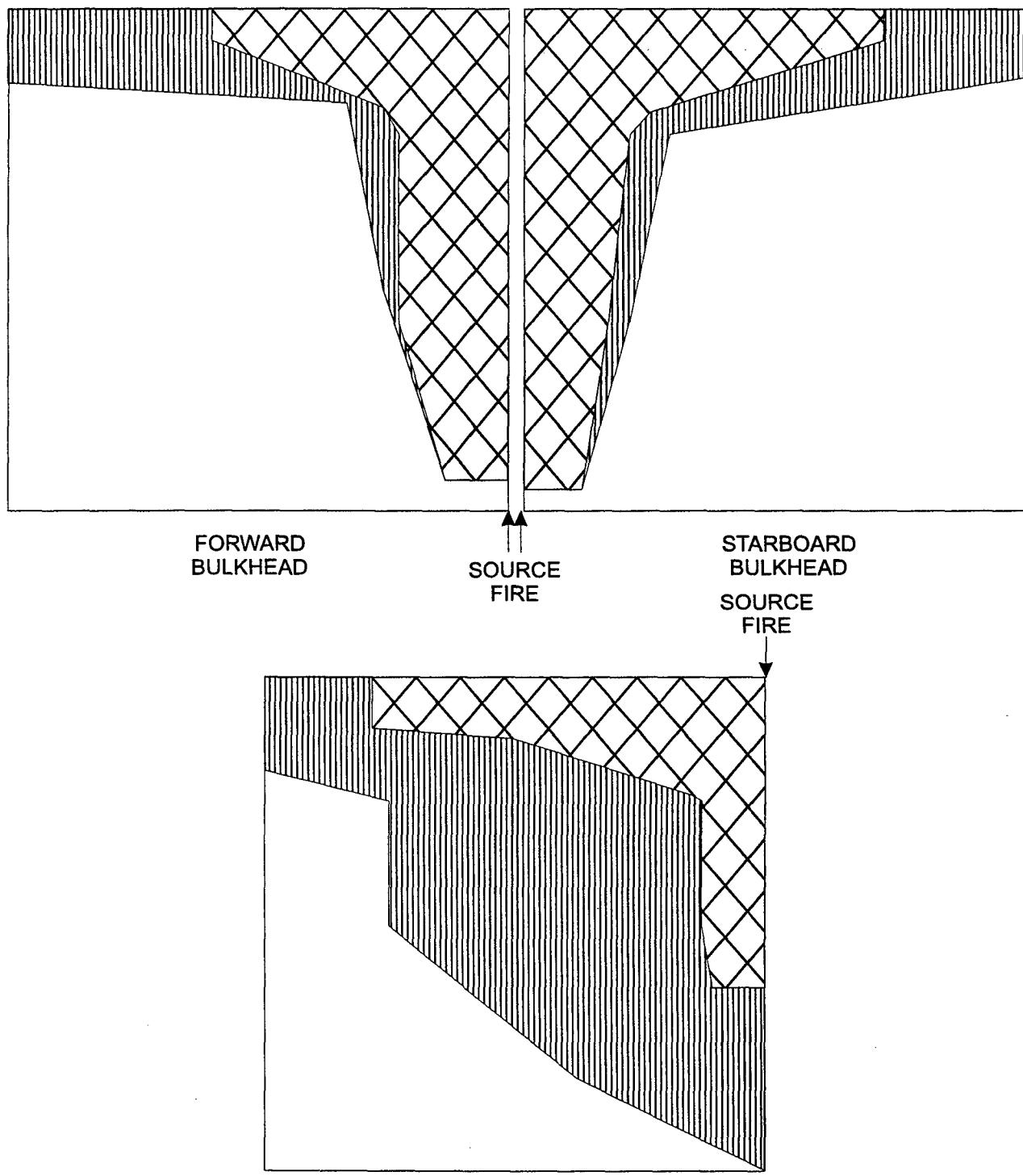


CHARRING

*Note: Overhead covered with soot

Test #73

C-5



BLISTERING/BROWNING

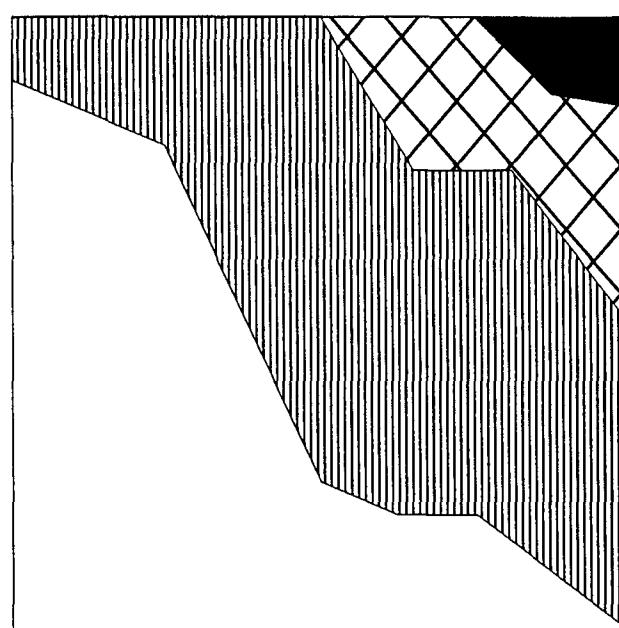
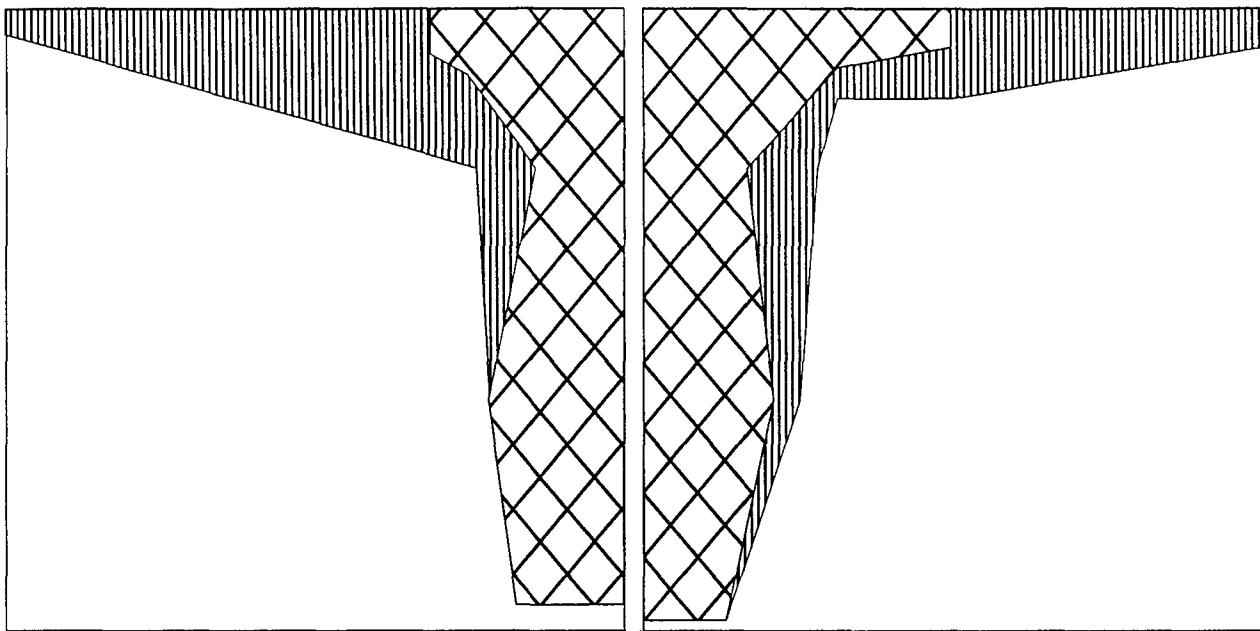


CHARRING

*Note: Overhead covered with soot

Test #74

C-6



BURN THROUGH

OVERHEAD*

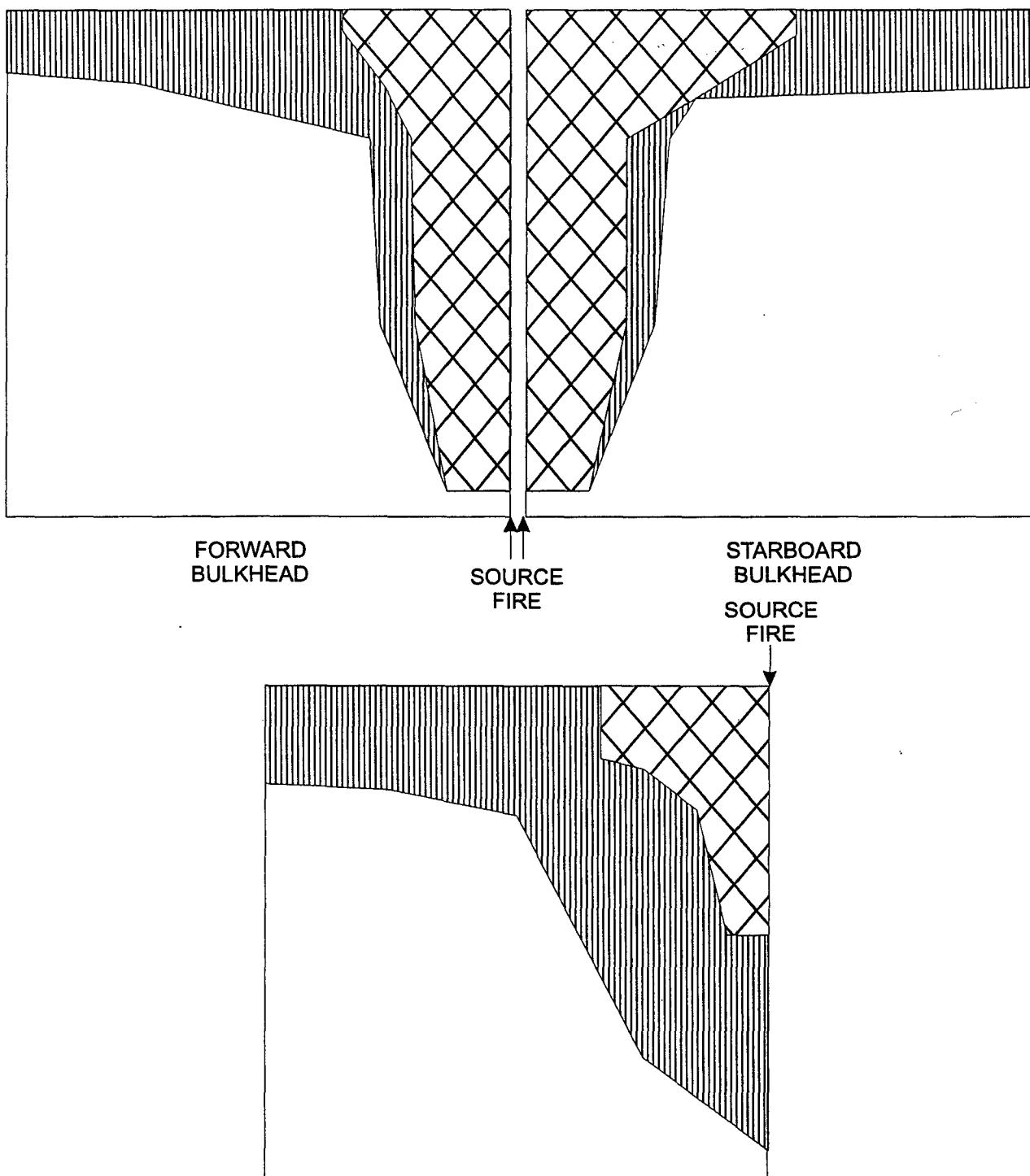
BLISTERING/BROWNING

*Note: Overhead covered with soot

CHARRING

Test #75

C-7



OVERHEAD*



BLISTERING/BROWNING

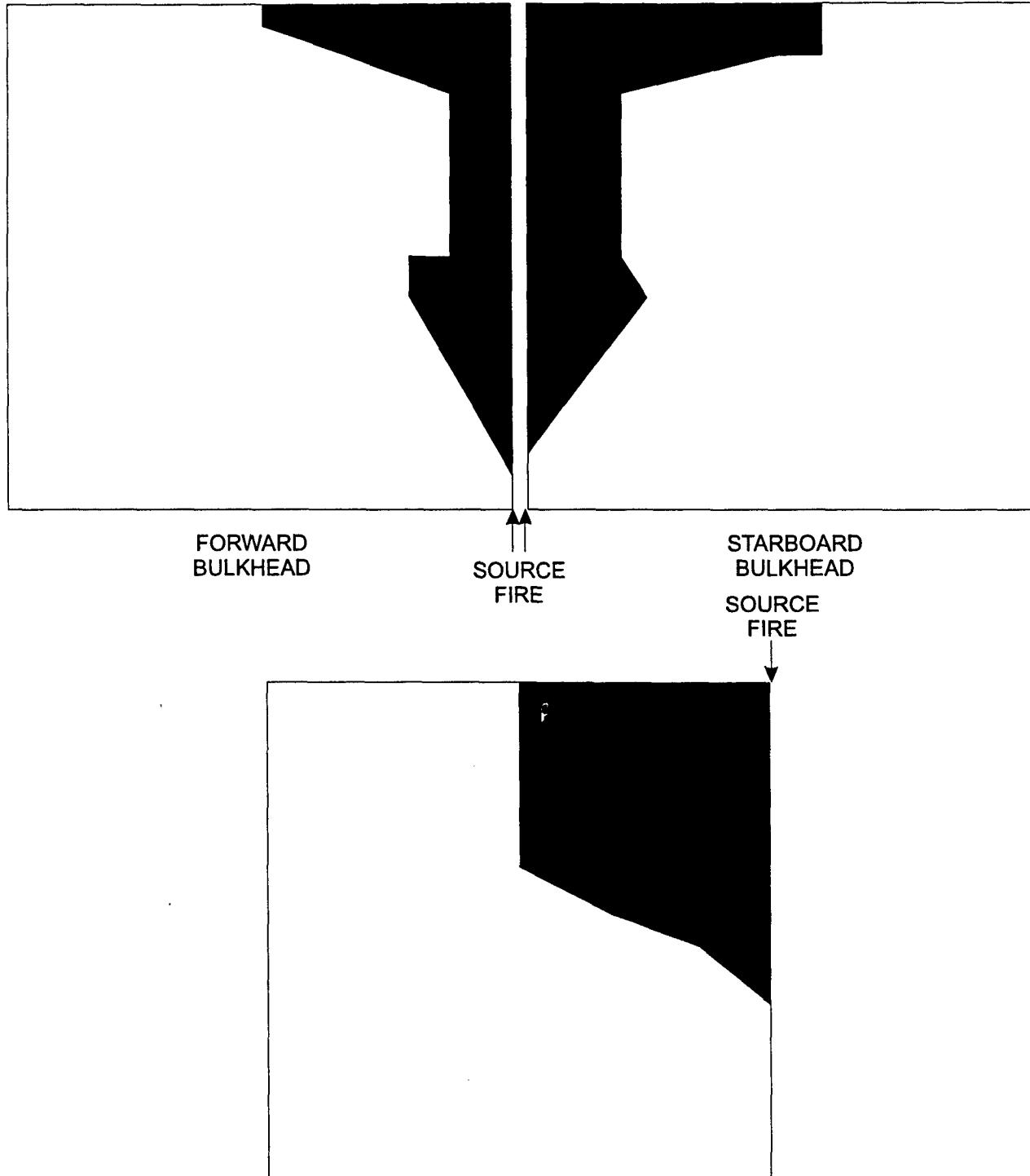


CHARRING

*Note: Overhead covered with soot

Test #77

C-8



OVERHEAD*

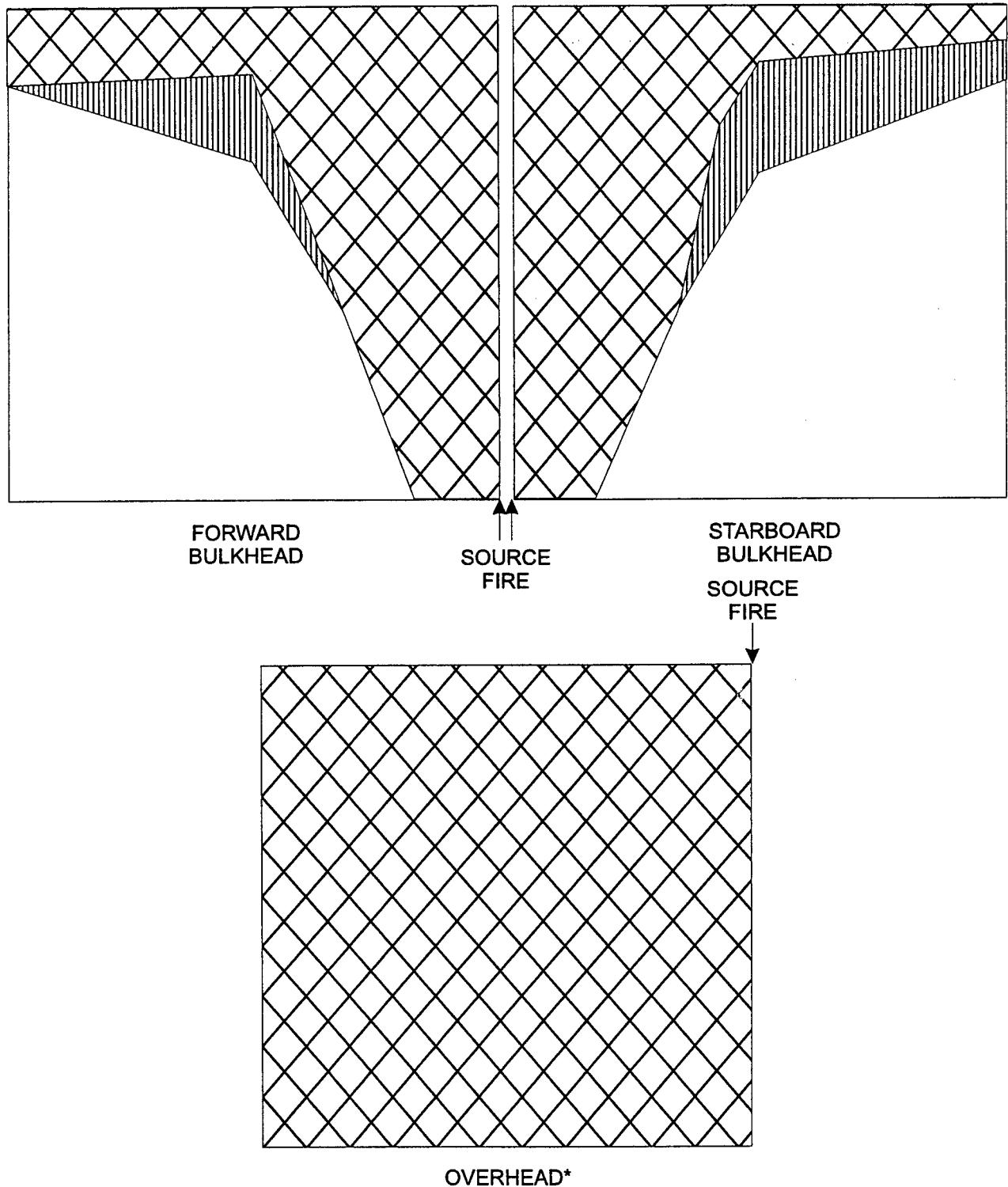


BURN THROUGH

*Note: Overhead covered with soot

Test #78 Burn

C-9



BLISTERING/BROWNING



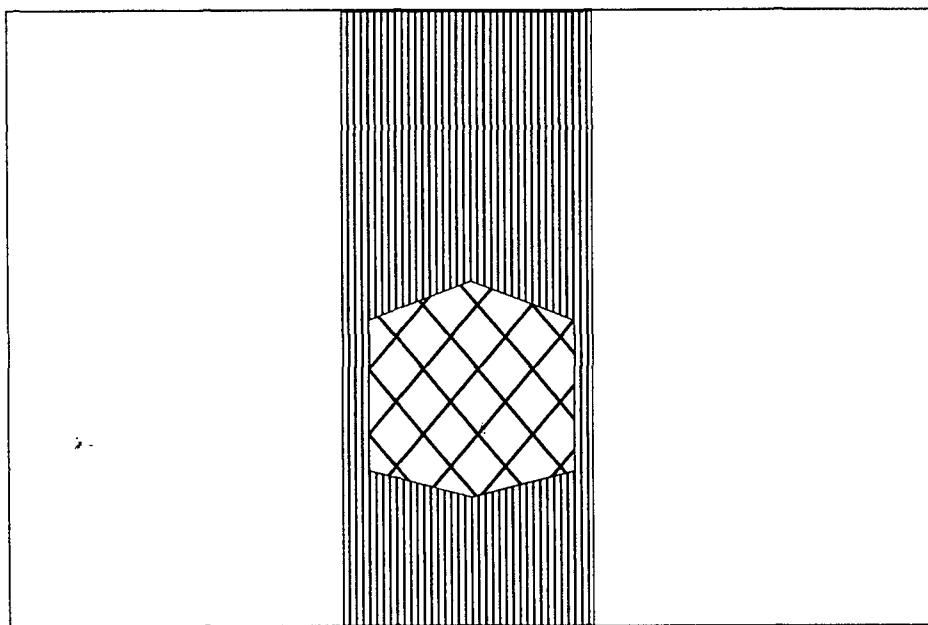
CHARRING

*Note: Overhead covered with soot

Test #78

C-10

FORWARD



BROWNING



CHARRING

Test #79

C-11